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ABSTRACT

This paper briefly characterizes schooling in America in broad terms, describes what is known about the relationship between teacher behavior and student behavior, and explains why certain classroom characteristics are related to student achievement. The paper begins with a description, of classroom practices in American schools, based in part upon selected papers that have been presented to the National Commission on Excellence in Education. Findings cited in this paper indicate that teachers vary widely in: (1) use of classroom time; (2) management of classroom activities; (3) selection and design of classroom learning tasks; (4) teaching and communicating with students; and (5) expectations and academic standards held for themselves, peers, classes, and individual students. It is noted that research also demonstrates that these aspects of classroom life are related to student achievement. This paper describes these research findings, particularly in the areas of: (1) time and learning; (2) classroom management; (3) active teaching; (4) curriculum content and academic work structures; (5) teacher expectations; (6) student influence; and (7) motivation and personal investment. Research findings are used to suggest how particular patterns of classroom behavior hinder or facilitate student achievement. References are included. (CJ)

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Schooling in America:

Some Descriptive and Explanatory Statements

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The purpose of this paper is to briefly characterize schooling in America in broad terms, to describe what is known about the relationship between teacher behavior and student behavior, and to explain why certain classroom characteristics are related to student achievement. The paper begins with a description of classroom practices in American schools, a description based in part upon selected papers that have been presented to the Commission. Extant findings clearly indicate that teachers vary widely in (among other things) (a) how they utilize time in the classroom, (b) how they manage classroom activities, (c) how they select and design classroom learning tasks, (d) how actively they teach and communicate with students about classroom learning tasks, and (e) the expectations and academic standards that they hold for themselves, peers, their classes, and for individual students. Not only do teachers vary across these dimensions, but research demonstrates that these aspects of classroom life are related to student achievement. Research also shows that student factors mediate between teaching and learning. A major goal of this paper is to describe these research findings.

However, we also want to go beyond the information given in research reports and suggest how particular patterns of classroom behavior hinder or facilitate student achievement. In attempting to construct explanatory arguments, we will of necessity draw upon a variety of research studies and frameworks beyond those mentioned above. Explanations concerning how specific practices relate to achievement should be viewed as speculative, because classroom research has not been designed nor conducted in a way which facilitates theory building and theory testing.

Time and Learning[2]

Theories of Time and Learning

One major set of theories views time as an economic variable, or a resource which can be manipulated by educators to optimize school productivity. A second

[2] Many of the descriptive statements in this section are contained in the paper prepared for the Commission by Nancy Karweit.

type of theory views time as a psychological variable which mediates the teaching and learning process. Most models of learning which incorporate this view are based on the work of Carroll (1963), who suggested that learning was a function of the time spent learning a task divided by the time needed to learn the task (although most research only takes into account the former aspect of Carroll's theory).

Measures of Learning Time

There are several measures of instructional time (lecture and seatwork): scheduled and actual days per school year, and scheduled and actual instructional time per subject. Although the days scheduled per school year are fairly uniform across states, recent, limited data on length of school days indicate some variability among grade levels. The amount of time allocated to a particular topic varies considerably from school to school and from classroom to classroom. Furthermore, once instruction in a subject has begun, studies show that the actual time spent on instruction varies among classrooms according to such factors as grouping practices, instructional techniques, class size, student ability distribution, number and length of interruptions, the ability of the teacher to manage the classroom, etc. Estimates differ, but studies basically indicate that only about 50-60% of the school day is actually used for instruction.

A fifth, and more refined measure of learning time is student engagement, or on-task behavior. Recent observational studies suggest that pupils are on task about 70% to 75% of the time. However, although variations in amount of time-on-task occur across days, students, and classrooms, little research has attempted to ascertain the sources of this variation: student factors, classroom teaching practices, or day-to-day fluctuations. It is clear from a variety of studies, though, that teachers' beliefs and behaviors are strongly related to time utilization (e.g., Schmidt & Buchmann, in press).

Concerning student factors, studies show that high-ability, high-aptitude, and female students tend to have higher rates of on-task behavior. During certain periods of the year, such as those in close proximity to holidays, and generally on Mondays and Fridays, students are likely to have lower engagement rates. The BTES study (Fisher et al., 1980) indicates that some classes vary as much as 40% in rates of attentiveness. This variability in engagement is associated with many of the same factors that affect actual time devoted to instruction in a subject: teachers' managerial abilities, classroom composition, mode of instruction, etc.

Mode of instruction is a manipulable variable which has been shown to be related to engagement. Using the BTES data, Rosenshine found that engagement was 70% during unsupervised seatwork and 84% during teacher-led discussion. These differences are important because students spend about 70% of classroom time doing seatwork, a practice necessitated by grouping. However, whether whole- or small-group instruction is better depends upon whether the losses in time through grouping are compensated for by increased quality of group instruction (appropriate seatwork tasks, instruction which is better matched to students' ability). However, as will be argued later in the paper, most empirical evidence suggests that too often classroom designs that call for large amounts of student seatwork are marked by insufficient procedural details and tasks that are poorly matched with student ability (e.g., Anderson, 1981; Doyle, 1982).

It should be clear from this discussion that many factors affect student learning time, and as one moves from more general measures of time (e.g., days allocated) to more specific ones (time-on-task), the amount of learning time is reduced. Despite the focus here on time-on-task, it is in many respects the factor which is least relevant to policy. Many variables

which affect student engagement (sex, aptitude, interest) are either difficult or impossible to change. On the other hand, research shows that factors such as instructional practices, organizational variables, and student absenteeism have sizable influences on amount of learning time available.

Studies of Time and Learning

Most recent studies of time and learning involve engaged time, reflecting the opinion of many persons that an indisputable relationship has been established between engaged time and amount of learning (Harnischfezer & Wiley, 1976; Borg, 1980; Sirotnik, 1982). However, others are more qualified in their support of this relationship (Kepler, 1980; Husen, 1967; Karweit, 1976). Thus, although there is much evidence that time-on-task is important, reasonable doubt about the generalizability of these studies and the magnitude of the effects justifies a careful review. Karweit's review concentrates on eight "more recent" studies of the effect of time-on-task on learning.

The Beginning Teacher Evaluation Study (Fisher et al., 1980) is probably the most widely known study to examine the effects of time on learning. One hundred fifty students (six from each of 25 classrooms) in grades 2 and 5 who scored in the 30th to 60th percentiles on specially designed reading and math pre- and post-content tests participated in the major phase of this study. During a 17-week period allocated time per content area and per pupil was recorded and target students were observed.

Results of this study showed that amount of time teachers allocated to instruction in a particular content area was positively associated with student learning in that subject and the proportion of allocated time students were engaged was also positively associated with learning. Further, the

proportion of time that reading and mathematics tasks were performed with high success, or Academic Learning Time (ALT), was positively associated with test scores. However, when ALT was divided into four separate variables and regression analyses were run for each grade and each subtest (with the individual student as the unit of analysis), there were significant residual variances on only 35% of the subtests. Furthermore, the regression weights indicate that a substantial amount of additional time would be needed to make noticeable changes in students' achievement scores.

There are several problems with the BTES study, such as the difficulty of controlling for pre-achievement, the use of short, criterion-referenced tests, and the use of "percent easy" and "percent hard" to calculate ALT for individual pupils. In fact, when class-level analyses were conducted on the BTES data (Fisher, Dishaw & Marliave, 1978) none showed any significant effects of any time variable on any test scores. Karweit concludes that it is likely that the BTES did not find stronger effects because the effects themselves were weak, not because of methodological or statistical artifacts.

Several other studies of upper elementary and junior high classes (Edmindston & Rhoades, 1969; Lahaderne, 1967; Cobb, 1972; Smith, 1979; Bell & Davidson, 1981; Evertson, Emmer & Clements, 1981; Karweit & Slavin, 1981) have found engagement measures ("attention" was the time measure in eight studies) to be related to achievement in the range of .25 to .58. With initial ability controlled, the partial correlation between achievement and the engagement variables was .09 to .43.

Conclusions: Karweit Review

Although Karweit's review focuses on studies of student engaged time, studies generally show that only about 55% of the school day is used for

instruction. School districts and schools might therefore want to examine general factors such as classroom interruptions and consider new methods of organization.

Another general finding of time studies, that student engagement rates are lower during seatwork than teacher-led instruction, must be viewed cautiously. Karweit suggests that if seatwork is carefully designed and appropriate to students' ability levels, grouping may be a more efficient method of instruction than whole-class teaching, particularly in classes with pupils of diverse abilities. However, to reiterate, extant data suggest that seatwork assignments are often poorly conceived and insufficiently monitored.

That these studies yielded weak and inconsistent relationships between time-on-task and learning after ability was partialled out has important implications for classroom organization. That is, theories of classroom learning (and subsequent studies of time and learning) should be based more on accommodating student diversity in ability (e.g., grouping practices) and on quality of instruction (e.g., nature of subject matter; content, within subject matter, mode of instruction, instructional pace; appropriateness of seatwork) rather than on allocated time per se.

The same amount of learning time can have dramatically different consequences, depending upon classroom and individual student factors, and learning depends upon both student attention and appropriate instruction. This dynamic view of learning assumes that factors affecting classroom learning vary over time (e.g., student interest, instructional pace) and that on-going events in classrooms affect this variation.

Problems with Research

Karweit concludes from her review of eight studies of engagement rates that the relationship between time and learning is "weak and inconsistent." Nevertheless, low to moderate correlations between attention and learning existed (.09 - .43), even when ability was statistically controlled.

Five of the studies she reviewed used "attention" as a measure of time, but we do not know how attention was operationally defined or measured. A related problem is shown in research by Peterson and Swing (1982), who interviewed students who had been taught a lesson on probability. They found that some students who appeared to be paying attention to lectures or class discussions were actually thinking about other things, such as how they would perform in comparison to other pupils if they were called on. Peterson and Swing found that attending as measured by a student's responses to an interview was a better predictor of achievement than attending measures based on classroom observations.

One study Karweit reviews included high school students, and two were of junior high students, where one might not expect to find as much variability in on-task behavior as in elementary schools. Diverse means were also used to measure learning, although only two studies (BTES and Evertson et al.) used content-specific tests, which might increase the correlation between time and learning.

Other Studies

Others who have reviewed different studies have concluded that there is a moderate relationship between time and learning (Rosenshine, 1979; Stuck, 1980; Caldwell, Huitt & Graeber, 1982; Wyne & Stuck,

1982). Wyne and Stuck (1982) review time and learning research from the perspective of the classroom teacher. They also point out that in interpreting this research one must consider methodological issues such as the diverse operational definitions of time used. As the level of time becomes more refined (from days allocated to ALT), the correlations between time and learning become stronger. Further, a wide variety of methods has been used to collect data. A third problem is that most of these studies are correlational and thus we cannot infer a cause-and-effect relationship between time and learning. According to Wyne and Stuck (1982), the practice in time and learning research of testing the correlations among a large number of variables and reporting only those which are significant is questionable. They also point out (as does Karweit) that studies vary in the unit of analysis they use to analyze data (student, class, school).

Caldwell, Huitt, and Graeber (1982) also emphasize the various levels of time. They computed Low Average, Average, and High Average amounts of various time measures available for schooling (daily and yearly) from data reported in four studies. Among their important findings were that allocated time for basic skills in the low-average situation was about two-thirds that of the average situation, but only half as much as in the high-average situation. Time allocated for mathematics was about one-third that for reading/language arts. It was evident that small changes in daily allocations of time, engagement rate, or ALT could result in large changes over the course of a year.

Implications of Time Studies

What, then, can we say about time utilization and educational practice? Many educators believe that the U.S. should consider lengthening

the school year and the school day in order to increase achievement and to keep pace with countries such as Japan and Russia, where students attend school for longer periods. They point out that the current nine month allotment is a carry-over from a time when the U.S. was an agricultural society. Although gross time measures such as available or allocated time necessarily place maximum limits on the amount of time available for instruction, it is likely that there may be optimal levels of time, and that these may vary according to students' backgrounds, ages, subject matter, and other factors.

Aside from increases in these more general measures of time, Wyne and Stuck (1982) rightly point out that a primary characteristic of effective instruction is teacher behavior that leads to increased opportunity to learn and high levels of student time on task. They suggest that teachers: (1) begin and end lessons on time; (2) reduce transition time between tasks and activities in a lesson; (3) minimize confusing or repetitious directions, distractions, and interruptions; and (4) monitor all pupils at all times. Perhaps most important in increasing engagement rates and achievement, however, are teacher behaviors related to classroom organization and quality of instruction such as grouping practices, mode of instruction, task structure, etc. In making any alterations in their behavior or classroom organization, teachers will have to consider their own teaching abilities and classroom contexts.

It appears to us that time measures do consistently relate to student achievement but that this relationship is not always substantial (although these relationships are positive and range from weak to moderate). When used with appropriate qualifications, time can be an important measure for analyzing classroom productivity. Still, we share Karweit's perspective that time measures are only a proxy for student

achievement and perhaps the most pressing question to answer is why time measures are not more fully related to achievement. Even precise measures of time (e.g., academic learning time) cannot be used for direct evaluative purposes because time measures are not powerful predictors of achievement (for an especially thorough critique of time measures see Griffin, Confrey, & Webb, 1981).

Among the many reasons that time measures do not predict achievement better is the fact that curriculum tasks students are assigned can be inappropriate or irrelevant even though students appear to be "engaged." As we shall see later in this paper, students are sometimes poorly prepared for seatwork assignments (teachers fail to provide students with an adequate rationale or motivation for doing the work or do not give students adequate procedural directions or sufficient information about the concept being studied), are assigned tasks that fill time but do not logically extend students' understanding of subject matter content, and are not given evaluative feedback about class work. Under such conditions one would not expect time-on-task to predict student achievement.

It is likely that measures of engaged time tend to show at least some correlation with student achievement because even superficial task involvement suggests that (1) the teacher possesses minimal managerial skills, (2) the teacher has negotiated some compliance with students, (3) there is some apparent agreed upon direction and purpose in the class, and (4) at least some of the time students reflect upon assigned work

Quality of Time: Student Effort

We suspect that unless the content on which students spend time is examined as well as the quantity of the time spent in specific settings,

relationships between time and achievement will remain relatively weak. Recent work reported by Robert Pace in a paper for the Commission illustrates the potential of studying effort from a qualitative rather than a quantitative perspective.

Pace's research was with college-age students and his goals were to address these questions: What is quality of effort? How is it measured? How does quality of effort relate to student satisfaction and performance? He made the fundamental observation that learning requires an investment of time and effort by students and he noted that time is a frequency dimension; whereas effort is a quality dimension. He asked students questions about their college work and assessed not only whether students spent time on certain activities, but also the quality of their efforts (e.g., preparation . . . merely taking notes and reading vs. making outlines of class notes and/or attempting to explain the material to someone else . . . routine visit with faculty member to check on reading list vs. substantive conversation with faculty member).

In predicting student achievement (a variety of self-report perceptions, e.g., improvement in the ability to write, etc.), Pace found that before considering his quality of effort measures he could account for somewhere betwen 24% and 36% of the results on criterion measures. This is almost exactly what many past studies have shown. However, when the quality of effort measures were added, he could explain from 39% to 47% of the performance on the criterion . . . a substantial increase, and from 13 to 15 percentage points more than past research. His important new conclusion was that although various factors influence who goes where to college, once the students get there what counts most in terms of learning gains is not who they are or where they are but what they do.

Pace notes that time-on-task has been shown in many research studies to be an important factor in explaining achievement; however, he notes that compared to quality of effort, time-on-task is a relatively weak explanation. Time spent on academic tasks is important, but quality of the time expenditure is more important. We now turn attention to classroom management--one of the ways teachers can improve time utilization in the classroom.

Classroom Management

In the 1960's it was popular to view classroom management as classroom discipline and considerable emphasis was placed upon what to do after students misbehaved. A research paradigm initiated by Kounin (1970) and validated and expanded upon by a number of researchers in the past few years has strongly illustrated that good classroom managers are not sharply differentiated in terms of how they react to student misbehavior. Rather, the key behaviors that distinguish good classroom managers are techniques which prevent misbehavior by eliciting student cooperation and involvement in assigned work.

Important Management Behaviors

Kounin (1970) studied teachers who had classes with relatively high engagement rates and infrequent discipline problems and tried to determine how these teachers managed classes in contrast to other teachers. He identified five major variables which differentiated effective and ineffective managers: withitness, smoothness, momentum, alerting, and accountability. Brief definitions of these terms follow.

Withitness refers to the extent to which a teacher communicates awareness of student behavior. One basic operational definition used by Kounin for measuring withitness was the ratio of the number of times the teacher stopped misbehavior appropriately (e.g., sanctioned the right

student or stopped the misbehavior before it became more serious) to the total number of teacher attempts to stop misbehavior.

Overlapping refers to a teacher's ability to deal with two or more issues at the same time. Koumin found that some teachers could deal with multiple events at the same time, whereas other teachers became too involved in one activity and neglected the other.

Smoothness is a teacher's ability to move through an instructional sequence without interrupting academic work by providing irrelevant information to students or by not overresponding to classroom behavior that is not interfering with classroom work. A negative example of smoothness would be a teacher's request for a student to pick up a piece of trash during a public lesson, thereby delaying all students and breaking their concentration on the lesson.

Momentum refers to avoiding behavior that slows down a lesson unnecessarily. Teachers who continue to complain about a student's behavior after he/she is back on task; those who slowly pass out work sheets to the class one at a time; or teachers who dwell on an academic topic longer than is necessary for student understanding all illustrate poor momentum.

Alerting behaviors are teachers' attempts to keep students engaged in tasks by telling students that their work will be examined or checked. Examples of alerting during recitation lessons include teachers' calling on students randomly, or reminding students that they may be asked to comment upon responses of other students. During individual seatwork, the teacher may alert students by telling them that their work will be checked in a few minutes.

Accountability is defined as the extent to which teachers follow up on their alerting behaviors. Do teachers actually ask students to respond to the answers of other students (after alerting students to that possibility)? From Kounin's standpoint, the purpose of alerting behaviors is to keep students involved (e.g., listening even though another student is responding); whereas, accountability teacher behaviors assess student performance (e.g., did they listen).

Teachers differed considerably on specific management dimensions as well as combinations of measures (high on withitness but low on alerting)

Management and Student Behavior

Kounin found that withitness, smoothness, momentum, alerting, accountability, and overlapping were all positively and at least moderately correlated with student involvement in classroom lessons. Kounin's (1970) basic findings have been expanded somewhat. For example, researchers have subsequently noted that teachers can alert or engage in too much accountability as well as too little). Fundamentally, however, Kounin's work has been consistently replicated by follow-up research and remains an important source of information about classroom management.

More recently, Kounin and Gump (1974) studied 596 videotape lessons and found that teachers of more successful lessons (lessons which had higher student involvement) provided continuous, explicit cues for appropriate behavior and insulated students from external intrusions.

Other Management Research

Emmer, Evertson, and Anderson (1980) studied 27 third-grade teachers during the first week of school as well as throughout the remainder of the year. These investigators attempted to identify teachers who had comparable classes at the beginning of the year but differed in their management

effectiveness (degree of student involvement in lessons) during the year. The findings of this study suggest that the form of the management system is not as important as the quality with which it is implemented. The authors state:

> Both groups of teachers had rules and procedures for their classes. What distinguished the more effective managers was the degree to which the rules and procedures were integrated into a workable system and how effectively the system was taught to the children . . . The better managers typically spent considerable time during the first week explaining and reminding students of the rules. Their pupils were not uniformly "ready" after the first day or two, and several of the teachers had relatively high amounts of off-task behavior at first. However, they taught the pupils to behave appropriately, through a variety of means (pp. 224-225).

Although effective managers differed from ineffective managers because of unique techniques they used (which less effective managers failed to use), the effective managers were superior primarily because of their clear expectations, commitment to teach these classroom routines, and their systematic follow-through.

Evertson and Anderson (1979) report that at the beginning of the year effective managers spent more time helping students to behave appropriately. These teachers had carefully thought out procedures for how students could get assistance, line up, turn work in, and general standards for classroom conduct, and they communicated this information to students. Some teachers had to "teach" these skills daily; whereas effective managers taught them systematically only at the beginning of the school year. Although it seems a small point, it is amazing how much time teachers can save by teaching simple routines and procedural expectations to students

early in the year. Some teachers lose valuable instructional time every day by failing to build in managerial routines (e.g., the teacher who talks five minutes at the start of the period to students who were absent the day before while neglecting the rest of the class).

Evertson and Anderson report that better managers were also more careful monitors of student behavior and dealt with misbehavior more quickly than less effective managers. More effective managers alerted students to the behaviors they expected and held students accountable for those behaviors. To the extent that students internalized these rules, they could monitor their own behavior more continuously (e.g., they knew when and how to get help from other students about missed assignments). Internalizing classroom norms for conduct and procedures not only makes the individual learner more efficient (e.g., minimal time wondering about when or how to approach the teacher for feedback), it minimizes the number of situations that demand overlapping teacher skills.

Researchers elsewhere have shown that more effective managers not only exhibit different patterns of behavior in their daily lessons (more withitness) but they also vary from other teachers in how they structure the instructional year initially. In a study that compared how beginning teachers started the year with a group of "best" teachers (who had been nominated by classroom students), Moskowitz and Hayman (1976) found that good teachers spent more time setting expectations and establishing behavior patterns on the first day than did begining teachers. However, "best" teachers were also more willing to accept and use student ideas than were beginning teachers. Hence, despite some popular shibboleths to the contrary, teachers who are successful managers are not necessarily stern and rigid. They do appear to be skillful in stating expectations and listening to and working with students to be sure that workable and understandable rules are

established and enforced (workable and shared expectations are probably more important conditions than who initiates the rules). Simply put, these teachers teach norms for appropriate behavior in the classroom.

Junior high research. In general, research in secondary schools suggests a similar relationship between teacher behavior and student involvement. For example, in a study of how more and less effective junior high teachers started the year, Emmer and Evertson (1980) report that better managers set clearer expectations for behavior, academic work standards, and classroom procedures during the first several class meetings than did less effective managers (although they did not need as much time for these tasks as elementary school teachers). Furthermore, they found that good managers in junior high schools (as in elementary schools) monitored students and dealt with inappropriate behavior promptly.

How Proactive Behaviors Enhance Involvement

Teachers who are successful managers start the year by establishing rules and procedures (some announce--others negotiate) and by communicating to students general expectations about what constitutes appropriate classroom behavior. Other teachers who are ambiguous about their behavioral expectations spend much time attempting to clarify expectations. Students in these teachers' classes may spend considerable time wondering (sometimes justly so) whether their behavior is inappropriate or not. In effective managers' rooms it is thus easier to know what is expected, and it is easier for students and teachers to monitor classroom behavior because they can distinguish appropriate from inappropriate behavior.

It is important that teachers who establish rules actively monitor and deal with inappropriate behavior (especially serious misbehavior). Effective managers may therefore sanction more behavior during the first three or four days of the year than do other teachers. Because students

eventually begin to engage in fewer off-task behaviors, it soon becomes even easier for the teacher to monitor the class (few disruptions to attend to) and to sanction behavior appropriately (e.g., correct the right student for his/her misbehavior). Failure to follow up on inattentive, disruptive behavior suggests to students that the teacher is not serious about maintaining rules and such behavior encourages students to do as they please. Similarly, a teacher who consistently reprimands the wrong student (e.g., a student who did not misbehave or a student who joined but did not initiate the misbehavior) indicates to students that he/she does not have the skills to maintain a management system (why not misbehave if you're as likely to be sanctioned for misbehavior when attending to assigned tasks as you are when actually misbehaving?). If teachers exhibit a lack of purpose, and/or a lack of interest in maintaining a management system, it is likely that students will ignore the teacher and classroom rules much of the time.

If teachers establish reasonable and workable rules, expect compliance, monitor the class, and insist upon appropriate behavior when necessary, we believe that students will understand the teacher's seriousness and purposefulness about classroom management and will begin to internalize classroom rules, expectations, and procedures.

In addition to establishing procedural and behavioral expectations, teachers must also demand that students use their time to complete curriculum tasks (as we will see later, the quality of teaching, supervision, and curriculum tasks vary widely). Effective managers assume that students will complete assignments and hold students accountable for work. Students know what to do when they finish assignments and do not waste time trying to determine the next step. That is, effective managers construct classroom environments in which expectations for student behavior are <u>continuous</u>.

In some classrooms teachers make it difficult for students (as well as teachers) to monitor their own behavior. For example, following a demonstration lesson such a teacher might assign seatwork but say, "If you work now you won't have homework." Such statements and expectations make students' classroom role ambiguous. Presumably, students can do the work now or later. Hence, when students choose not to do seatwork it is difficult to tell if their behavior is appropriate or inappropriate. Furthermore, there is the question of what these students will do while other pupils are likely engaged in seatwork.

In contrast, more effective managers are likely to make a transition from demonstration to seatwork in the following way. "Now you do problems 15-30 at your desks. In ten minutes we will check to see what progress you have made and correct any problems we encounter. If you have difficulty with a problem do the next one and I'll be around to help you. Get started now." Here the students' role is clear; under all conditions students should be attempting to do assigned work . . . even if they encounter difficulty they know to proceed to the next problem.

All of these aspects of management must be in place for the system to work. For example, teachers who build general credibility with students during the first few days of school, explicitly establish learning goals on a daily basis, and who build in continuous criteria for helping students to know what is expected of them at a given moment will soon lose students if their work is not checked on a regular basis.

Doyle, in a paper for the Commission, argues that accountability drives the task system and that students tend to take seriously only that work for which they are held accountable. We share his belief that accountability is important and we echo his contention that teachers

need to learn the importance of accountability and explore ways in which accountability can be handled creatively and constructively in classrooms.

We have discussed some classroom management variables that relate to student achievement and have offered some tentative explanations about why these variables influence student achievement. In essence, a good management system announces intentions and makes it possible to actively monitor teacher and student behavior to see if progress is being made in shared goals. Such information increases the understanding of students who are intrinsically motivated by school tasks and teachers concerning how to proceed and do well in the classroom. A management system helps to establish necessary conditions for students without these orientations to learn self-control and to engage in academic tasks with the understanding that classroom rewards and privileges are associated with personal progress on assigned tasks.

Along similar lines, Doyle argues that without highly developed management skills a teacher will rely on simplistic and routine assignments which elicit cooperation from students, especially students who are inclined toward disruptive activities.

Summary and Conclusions

In this section we have described some classroom managerial variables that are associated with student achievement. Good management skills provide a necessary structure (but not a sufficient one) for active classroom learning. We believe that poorly managed classes inhibit students' involvement in the instructional program and negatively affect learning outcomes. Although we have not examined the research base in any detail, the correlational evidence relating the management behaviors reviewed here to student achievement is very consistent and

the obtained relationships are typically at least moderate (Brophy, 1979). Furthermore, there is growing experimental evidence that the managerial principles discussed above can be taught to teachers, who can use them to improve student attention to assigned work (e.g., Anderson et al., 1979; Good, Grouws, & Ebmeier, in press).

Considering management research and the availability of materials for teaching managerial skills to teachers (Good & Brophy, 1978; in press; Emmer et al., 1980) it is important that this information be conveyed to preservice (and inservice) teachers. There is much new information about classroom management that was not widely accepted or understood a decade ago. It is not clear, however, how widely these ideas are held and disseminated by many teacher educators. We find it surprising that many recent teacher graduates are unaware of managerial concepts like "withitness" and "overlapping" which have repeatedly been demonstrated to be important considerations in effective management. Teachers' unfamiliarity with these concepts is especially surprising when one considers that many teacher educators believe that classroom management is an important teaching task. The access that we have to teachers from many different institutions is limited, and our perspective on this issue may be inappropriately biased. However, Ken Howey (personal communication) suggests that his survey of over 200 teacher education institutions supports this view. It would seem that schools of education, as well as staff development programs, need to integrate findings from management research into their academic curricula.

Although we advocate greater dissemination of management research, certain qualifications must be considered when related findings are applied. First, effective managers in the research reviewed here

thought about the needs of their students and adjusted their teaching to particular classes. These teachers appeared to be good decision makers. Although better managers seemed to build a communication system that helped students to identify how to respond appropriately without teacher direction in the classroom, Emmer et al. (1980) noted that they also had a sense of students' perceptions and needs. That is, in contrast to other teachers, effective managers first taught students rules related to their most immediate needs (e.g., where to put the lunch box, how to obtain permission to use the bathroom, etc.). Effective managers were also more likely to appropriately consider the following factors in relation to lesson design: (a) attention span of students; (b) relation of lesson content to students' interests; (c) appropriate work standards; and (d) assurance of reasonably high level of student success. It thus seems that in addition to an understanding of management techniques, teachers must also possess a keen understanding of how students learn and develop.

Although extant research yields important, practical knowledge, we need more research to assist in understanding how management strategies influence student learning in various classroom contexts. The boundaries between instruction and management become "blurred" upon examination. The managerial or instructional issues which are important to teachers will vary, depending upon the subject matter and whether teachers pursue process or product goals. For example, to a teacher interested in student achievement in mathematics, student attentiveness and participation are largely managerial issues. From the standpoint of a social studies teacher pursuing process goals, the form of attentiveness and level of participation may be instructional issues.

This discussion is included to remind the reader that classroom management has traditionally been viewed as a product variable (e.g., maintain student attention). Research has yielded important facts and concepts concerning management, but it seems important to realize that other ways of viewing this variable have not been explored. We concur with Brophy (1979), who advocates the study of instructional issues which are independent of classroom management. In order to do so, however, better definitions of management and instruction than presently exist will be needed and these issues should be studied both from process and product perspectives. In addition, future researchers must better conceptualize why some classroom management strategies work and test specific theoretical arguments. Similar attention should be paid to why and how teachers who were observed to be effective (without intervention) developed their managerial strategies.

In particular, researchers should examine how teachers' classroom management styles influence student initiative and self-control. Students need structure and purposeful direction, but they must also have the opportunity to learn to determine their own objectives and to develop strategies for evaluating progress in self-chosen goals. Such abilities become increasingly important as students get older.

We have stressed that better time utilization and appropriate classroom management techniques can facilitate achievement; however, more time and well-managed classrooms are not likely to increase student achievement unless students are provided with appropriate curriculum and instructional opportunities. We now turn to a discussion of recent research on these topics.

Active Teaching

In our opinion a major contribution of the research of the 1970's was to demonstrate that teachers make an important difference in student learning in basic subjects. This point is now well documented. To some this claim seems only common sense; however, many have argued that teachers, and even schooling, make no substantial contribution to students' intellectual development. Research conducted in the 1970's indicates that some teacher behaviors are associated with increased student achievement. However, these large-scale investigations have shown considerable variation in how teachers use instructional time. Concerning educational policy, it thus seems that the use of public funds to adequately train teachers is a wise and necessary investment if student achievement is to be enhanced.

It is beyond the purpose of this paper to describe the recent research on teacher effectiveness, but it is useful to illustrate the implications of these studies by briefly describing one program of research. For more details the reader can consult the paper prepared by Good for the Commission or see Good, Grouws, and Ebmeier (in press).

Missouri Mathematics Program

About ten years ago, Doug Grouws and I became interested in trying to determine whether or not teachers made a difference in mathematics learning. We decided to study mathematics because we felt that it was an important part of the elementary school curriculum and that teacher effects would be more evident in mathematics than in subjects like reading. We wanted to avoid as much as possible subjects where teaching influence might be contaminated by home influences (e.g., most parents won't attempt to teach "new" mathematics).

The purpose of the original study was to determine whether it was possible to identify teachers who were consistent (across different groups of students) and relatively effective or ineffective, using student performance on the Iowa Test of Basic Skills as an operational criterion. In brief, results showed that high residual mean achievement scores were strongly associated with several teacher behaviors: (a) generally clear instruction and availability of information to students as needed (process feedback, in particular); (2) a non-evaluative and relaxed learning environment which was task focused; (3) higher achievement expectations (more homework, faster pace); and (4) classrooms which were relatively free of major behavioral disorders.

Teachers who obtained high student achievement test scores were active teachers. They gave meaningful and clear presentations of what was to be learned, provided developmental feedback when it was needed, structured a common seatwork assignment, and responded to individual students' needs for help. These teachers presented meaningful content, but they also seemed to listen to and learn from student responses (e.g., reteaching when student performance indicated the need). Effective teachers also encouraged students to participate actively and to initiate academic questions when appropriate. Indeed, these teachers were helping students to be active learners.

Elementary school experiments. We were pleased that some consistent differences between relatively effective and ineffective mathematics teachers could be found in correlational research. However, at that point we only had a description of how more and less effective teachers (in our sample) behaved differently. We did not know if teachers who did not teach the way more effective teachers did could change their behavior or whether students would benefit if teachers were

trained to use new methods. To answer these questions, we developed a training program (combining information about how effective teachers behaved in the naturalistic study with other research findings) and conducted an experimental study to determine what effects the program would have on teacher behavior and student achievement in fourth-grade classrooms.

In writing the training program, we characterized teaching as a system of instruction with the following features: (1) instructional activity is initiated and reviewed in the context of meaning; (2) students are prepared for each lesson stage to enhance involvement and to minimize errors; (3) the principles of distributed and successful practice are built into the program; (4) active teaching is demanded, especially in the developmental portion of the lesson (when the teacher explains a concept being studied, its importance, etc.).

Observers' records indicated that the experimental teachers implemented the program very well (with the exception of certain recommendations concerning how to conduct the developmental portion of the lesson). Pre- and post-testing with the SRA standardized achievement test indicated that after two and one-half months of the program, students in experimental classrooms scored five months higher than those in control classrooms. Results on a content test which attempted to more closely match the material that teachers were presenting than did the standardized tests also showed an advantage for experimental classes (for details, see Good & Grouws, 1979).

Pre- and post-testing on a ten-item attitude scale revealed that experimental students reported significantly more favorable attitudes at the end of the experiment than did control students. Also, it is important to note that anonymous feedback from teachers in the project

indicated that they believed the program was practical and that they planned to continue using it in the future. Research elsewhere indicates that teachers have a favorable reaction to the program, even when it is presented and discussed without the involvement of the developers (Keziah, 1980; Andros & Freeman, 1981).

However, it is important to qualify these findings. Although our results suggested that the treatment generally worked (i.e., the means in each cell were in favor of the treatment group), the program was more beneficial for certain combinations of teachers and students than for others. The data collectively indicated that teachers who implemented the model got good results, yet some teachers used more facets of the program than did other teachers (see Ebemeir & Good, 1979, for details).

Secondary school experiment. Considering the relatively successful results of experimental work at the elementary school level, we were very much interested in expanding our inquiry to secondary classrooms. Our research at the secondary level involved a strong control for Hawthorne effects (as did the elementary school work) and our findings again indicated that some teachers implemented the program more fully than others. Among many findings were the following: (a) the average implementation score correlated significantly with students' attitudes toward mathematics, and (b) instructional time spent on verbal problem-solving activities correlated significantly with students' problem-solving achievement scores. Finally, students' performance in verbal problem solving in both partnership (teachers helped to modify the program) and treatment classrooms was superior to problem-solving performance in control classrooms, although students' general computational achievement was not affected by project participation.

Summary of research findings. Our research on mathematics instruction, especially at the elementary school level, has convinced us that teachers do make a difference in student learning, and that inservice teachers can be trained to teach so that they increase student performance. The system of instruction that we believe is important can be broadly characterized as active teaching. Active teachers presented concepts, explained the meanings of those concepts, provided appropriate practice activities, and monitored those activities prior to assigning seatwork. The fact that these teachers appeared to look for ways to confirm or disconfirm that their presentations had been comprehended by students was particularly important. They assumed partial responsibility for student learning and appeared to be ready to reteach when necessary.

Implications

Research on teacher effectiveness has not yielded specific guidelines about how to teach, but it has provided clear evidence that teachers can and do make a difference. Many recent articles advocate increasing the quantity of teaching (more time for basic skills instruction, more "time-on-task"). However, a more important implication of recent research is that the quality of teaching needs attention. The initial naturalistic study of more and less effective mathematics teachers indicated that effective teachers were distinguished by how they taught, not by the amount of time they spent on mathematics. Teachers who obtained higher gains made better use of time and obtained more student involvement, but they also maintained a good balance between theory and practice (conceptualization, application, and drill). We believe the most important implication which teacher effectiveness research has for teacher education is that teachers need to be active in their teaching.

We prefer the concept of active teaching rather than the term "direct instruction" (which has been used to describe the pattern of behavior of teachers who obtain higher-than-expected achievement from students), because it connotes a broader definition of teaching than does the existing research base. In active teaching, the initial style can be inductive or deductive, and student learning can be self-initiated or teacher-initiated (especially if thorough critiques and syntheses follow student learning attempts). Active teaching also connotes a broader philosophical base (active teaching can occur in classrooms using a variety of classroom organizational structures), and should become somewhat less direct as students mature and instructional goals are more related to affective and process outcomes. Also, active teaching techniques can be applied in both teacher-led instruction as well as in student team learning instruction. Active teaching is an important construct for describing teaching. With the apparent growing pressure for teachers to function as classroom managers rather than as instructors, teacher education programs should devote increased time to helping teachers understand active teaching.

Others also advocate more attention to active teaching, including instruction which encourages student problem solving and critical thinking. For example, Durkin (1979) argues that comprehension skills are insufficiently emphasized in reading instruction and that some educators believe that these skills cannot be taught. Such low expectations can obviously be self-fulfilling. Duffy and McIntyre (1982) note the unfortunate and unproductive tendencies of teachers to equate teaching with providing opportunities for practice. Current research suggests that more effective teachers take the time to explain concepts and to

assess students' comprehension of material assigned to them before extended practice is required.

Qualifications

The concept of active teaching is particularly applicable to basic subjects such as mathematics and reading in elementary schools and secondary schools when achievement goals are of primary interest. Active teaching may be inconsistent with teachers' objectives in other subjects (e.g., social studies) where process goals are more important than product goals. The model of active teaching discussed here has evolved from research on the short-term effects of teacher behavior on student achievement. Further work may enable educators to understand how patterns of teacher behavior influence student motivation, initiative, and ability to learn independently. Within the context that it has been studied (math, reading, short-term achievement goals), however, active teaching appears to be a consistently effective teaching method. These results may be useful for educators, if they do not over-react to them. If . . . seen as a set of specific behaviors or as a generic form of teaching that transcends all settings, then it is another polemic . . . another educational shibboleth. However, if active teaching is used as an orienting concept that has to be adjusted sensibly and sensitively to different educational settings, then it can be valuable to practitioners.

Good and Doyle (in separate papers for the Commission) point out that if structured and active teaching is used it should focus upon the meaning of concepts and helping students to initiate questions about the meaning of concepts under study. It is hypothesized that such a form of structured teaching will have short-term positive effects upon student

motivation without long-term negative consequences for students (e.g., making them overly dependent upon the teacher). However, we do not yet have information about the forms of structured teaching that optimize both long-term and short-term achievement. Still, it is clear that at present too many teachers do not give students systematic, meaningful instruction. Although we acknowledge that there can be too much information processing and modeling of problem-solving processes by teachers for students, this does not seem to be a pervasive problem today in American classrooms.

However, as students become older, they should assume more responsibility for establishing their learning goals and evaluating their performance. Unfortunately, when students are asked to accept these responsibilities they often have not been taught self-management skills (e.g., the Commission paper prepared by Neumann makes it clear that many college students do not know how to manage time). Students need to be taught these skills before they are allowed to use them.

Why Active Teaching Facilitates Achievement

Having made some qualifying statements about the practical value of active teaching, we now suggest why active teaching relates to achievement. Such comments are speculative, because research which tests theories has not been conducted; however, we think it important to at least begin to explain school-related research.

Theory. Past research has shown that teachers vary in their behavior and in their effects on students. Since the Missouri Mathematics Program focused on whole-class instruction, it is difficult to speculate about its effects on particular learners or for specific content. Nevertheless, it might be instructive to present some hypothetical comments about why the Missouri Program appears to work at a general level.

We have evidence that the Missouri Mathematics Program in general had a positive impact upon the mean performance of students in experimental classrooms, but we have no data to explain why the program worked. The program was probably effective because many elementary school teachers simply do not emphasize the meaning of the mathematical concepts they present and do not actively teach these concepts. Too much mathematics instruction in elementary schools involves a brief teacher presentation followed by a long period of seatwork. Brief explanations of seatwork do not allow for meaningful and successful practice of concepts that have been taught, and the conditions necessary for students to discover or use principles on their own are also lacking.

It seems plausible that the emphasis in our program upon development leads teachers to think more deeply about the concepts that they present and to search for better ways of presenting those concepts to students. Furthermore, because of the way in which development is conducted, teachers can detect students' errors before they have a chance to practice those mistakes for a long period of time. This feature of the program seems to be especially desirable, because some research indicates that it is very difficult for students to tell teachers that they do not understand instruction. A clear, extended development lesson helps students to understand more fully the concepts that they must master and how those concepts are related to others they have learned. Development thus gives both teachers and students a better rationale for learning activities and a sense of the continuity of mathematical concepts.

The controlled practice portion of the lesson enables teachers and students to determine whether basic concepts and mechanics are being understood. Students of teachers who expect that initial teaching will often

result in less than adequate student comprehension and believe that student mistakes call for reteaching, not rationalization, will benefit most from controlled practice. The information such teachers gain during this lesson phase allows them to correct and to reteach aspects of the lesson so that students develop appropriate conceptual understandings and skills prior to practice. Furthermore, students should be much more active thinkers during the development and controlled practice portions of the lesson because they know that successful completion of seatwork and homework are dependent on their comprehension of material presented during development. Checking of seatwork allows teachers one final opportunity to correct misunderstandings prior to the assignment of homework. Following successful practice, brief homework assignments should offer students positive learning experiences that both provide for better integration of material and the development of more appropriate attitudes about mathematics and their ability to learn it. In particular, students will probably conclude that increased personal effort during mathematics instruction leads to positive learning experiences. Students would thus be presenting more positive feedback to teachers about mathematics instruction (e.g., handing in completed homework and exhibiting positive verbal and non-verbal behaviors during mathematics instruction) which in turn increase teachers' belief that they can present mathematics effectively. Such belief leads to renewed efforts on their part to carefully structure mathematics instruction.

Future research. It is important to note that the preceding hypotheses need to be tested if we are to develop a more adequate understanding of the antecedent conditions necessary for successful mathematics learning. For example, research is needed to determine if in fact teachers who use the program identify more student errors and can more readily understand

those mistakes during development than teachers who use different teaching techniques. It would be equally important to assess whether students in experimental classrooms are more active thinkers during development than are students in control classrooms (perhaps by asking students to do problems immediately after the development portion of the lesson). More research is needed concerning the conditions under which student errors are developmentally helpful and lead to increased student effort to integrate material, rather than debilitating and convincing students that they do not understand mathematics. When researchers begin to examine the assumptions on which studies of teaching effectiveness are based by stating and testing the specific ways in which student learning is influenced, the conditions under which teaching and learning strategies are useful will become clearer than they are at present.

Another important area that needs more study is the quality of active teaching. The Missouri Mathematics Program appeared to be helpful in elementary schools because it increased the amount of time teachers were utilizing for development, and it thus helped them to become generally more active in their teaching of mathematics. However, we found that most secondary teachers regularly included a development portion in their lessons and that time, per se, was not as important as is the quality of development. If improvements are to be made in teachers' instruction during development, it seems important to develop more adequate procedures for conveying to teachers criteria which can be used to estimate the quality of their instruction. In particular, more content-focused development needs to be emphasized in future research.

Although the Missouri program provides general strategies for teaching mathematics, particular content needs to be studied more thoroughly. Better conceptualization of the instructional demands of different types of

mathematical content is needed and information about how the development portion of the lesson can be adjusted in ways that are consistent with changes in content.

Curriculum Content and Academic Work Structures

Teachers vary greatly in the amount of time that they spend on particular subject areas in elementary schools. Indeed, students assigned to a certain teacher in a school may spend twice (or more!) as much time studying mathematics as students assigned to a different teacher in the same school. In addition to the amount of time teachers allocate to a particular subject matter, there is also a great variance in how teachers use instructional time. For example, Good and Grouws (1977) found that some teachers assign considerable seatwork; however, others spend more time on development (explaining to students the meaning of concepts and how to do work) prior to making seatwork assignments.

Teacher Attitudes and Time Allocations

It seems that teachers' preferences for teaching various subjects may be an important determinant of how time is allocated in elementary classrooms. Schmidt and Buchmann (in press) have found that teachers allocate time to various subjects in part according to their attitudes toward those subjects (the degree of enjoyment they experience in teaching them). The six teachers studied all averaged the most time, about 100 minutes per day, for reading/language arts instruction, but they varied widely in how much of that time was devoted to each of these areas (particularly to writing during language arts). The next largest allocations were either to mathematics or social studies, but there was a reciprocal relationship between these two subjects: teachers who taught more mathematics tended to teach less social studies, and vice versa.

All of these differences were related to teacher attitudes. Teachers who enjoyed teaching reading more than writing tended to stress reading over language arts instruction, and teachers who enjoyed mathematics more than social studies tended to allocate considerable time to mathematics but little time to social studies. In fact, teachers who enjoyed teaching mathematics spent over 50% more time per pupil teaching mathematics than teachers who did not.

Teacher's content emphases (how much emphasis they felt should be given to five curricular areas) were also generally associated with larger allocations of time. However, the relationship between their sense of competence in teaching content areas (how difficult they found different subjects to teach) and time allocations was less clear.

This study does indicate, however, that for successful instruction to occur, teachers' knowledge and teaching skills must be sufficiently developed in each subject that they can enjoy and feel successful teaching that subject.

How Teachers Influence Content

That the influence teacher preferences have on curriculum emphasis varies somewhat across school settings is shown by a recent review of research describing how teachers determine the content (both intentionally and unintentionally) that students learn (Brophy, 1982). Brophy describes work by the Content Determinants Group at Michigan State University (Schwille et al., 1979) which showed that seven fourth-grade mathematics teachers' decisions about content were complex and varied. These decisions include: how much time will be devoted to a subject, what topics will be taught, to whom these topics will be taught, when and how long each topic will be taught, and how well the topics are to be learned.

Some teachers had a great deal of autonomy in making these decisions, but others were subject to officially mandated instructional guidelines. In addition to external pressures, teachers' own knowledge of subject matter, past experience teaching, beliefs, and their assessments of the benefits and costs of content alternatives affected their behavior. Furthermore, regardless of the strength of external pressures concerning the curriculum for students in general, all teachers responded to individual differences among students, and all differentiated to some degree within their classes by teaching more or different content to brighter than to duller students. It is clear that teachers are policy brokers rather than policy implementers, and thus the content taught is likely to be a compromise between officially adopted content and the needs of students as teachers view them (Schwille et al., 1982).

Brophy refers to the curricula teachers adopt for their students as "intended" curricula. However, due to time pressures and unforeseen learning difficulties, the material actually taught to students is often only a subset of that intended. Furthermore, some of the material that is taught will unwittingly and unsystematically be taught incompletely, incorrectly, or in ways that cause student learning to be different from that originally intended. In addition, some of the material that is taught will be distorted by students as they attempt to integrate it with erroneous preconceptions.

Reductions in the intended curriculum. Because of time constraints, overly brief or vague instruction often occurs in the classroom of two types of teachers: those who try to fit in too much content, and those who are overly dependent on curriculum materials to convey instruction to pupils. The latter type of teacher does very little active instructing.

For example, Duffy and McIntyre (1982) found that most reading teachers were heavily dependent on curriculum materials provided by commercial publishers. Teachers' expectations for their classes are also important determinants of content taught (Lanier et al., 1981), both to entire classes and to subgroups and individuals within classes.

Distortions of the intended curriculum. One type of distortion occurs as students integrate new material with their existing (and often erroneous) preconceptions. In addition, direct content distortion can occur because of the teacher's inadequate knowledge of subject matter. Indirect distortion occurs because of incomplete, poorly sequenced, or inadequate teaching. This inadequate teaching likely has the most serious effects on low-achieving students, especially in classrooms where students are grouped by ability. Also, teacher failure to explain the purpose of activities adequately often produces discrepancies between the meanings of those activities as seen by the teacher and the students.

Differences in Mathematics Curricula

Many elementary school teachers seem to be relatively free to decide the extent to which they emphasize science, math, or social studies in their classes. However, after decisions to allocate time are made, how do teachers determine what content they will teach? Freeman et al. (in press) suggest that the textbook used by a teacher largely determines the curriculum that students will receive. However, these investigators found that the mathematics curriculum presented in four different textbook series varied considerably. Considering that teachers usually teach the curricula presented in textbook (although sometimes distorting and fragmenting content, as noted above), Freeman et al. contend that variation in text content suggests that the material students are taught (opportunity to learn)

will vary in important ways in classrooms at the same grade level which use different books.

Freeman et al. note that in addition to the variation in content that exists among textbook series, there are also considerable differences between the content of various textbook series and that measured by some standardized mathematics achievement tests. They note that the mismatch between material in some textbook series and concepts measured by particular achievement tests is quite large. It is thus likely that some school districts use achievement tests that have little relation to the curriculum that some teachers are using.

Variation in Social Science Texts

Similar variations in content have been found in social science textbooks. A comprehensive report (The Status of Pre-College Science, Mathematics, and Social Science Education: 1955-1975) compiled for the National Science Foundation indicates that most studies report that there are substantial variations in quality and amount of treatment of social science content (geography, history, economics, political science, sociology, psychology, and anthropology) and methods from one text to another. Texts emphasize geography and anthropology at the elementary level; secondary books include more political science and economics. Some of the factors on which texts are found to vary include: structure/format (how connectable or relatable ideas presented are); accuracy; whether and how controversial material is presented; emphasis on ideas of social importance; extent of multi-disciplinary approach; guidance provided in teacher's manuals about what concepts should be covered; degree to which concepts are oriented around the individual; strength of the "content base" provided for teaching a subject; general representative content coverage; and extent to which

critical thinking and problem solving skills are encouraged. It should be noted that texts in general were found to be seriously deficient in these last two areas. In particular, most texts relied on memory and emphasized "what" in detail, ignoring "why."

As an example of variation in content coverage, Ratcliffe (1966) analyzed six eleventh-grade history texts (75-94% of total market). He found that only 44 of 98 terms judged to be "representative ideas" of the social sciences were included in the texts. Only one term, inflation, received qualitative treatment in all six books. In fact, only 20 terms received such treatment in more than one of the texts. Obviously, the social science concepts and content that a particular student has the opportunity to learn depend upon which textbooks his/her teacher adopts, which concepts the teacher emphasizes, as well as how much time the teacher allocates to social science topics.

Quality of Instructional Materials

In a paper for the Commission, Doyle notes that students spend much classroom time reading textbooks, and he argues that much instruction consists of little more than the teacher going over content contained in the textbook. However, considering that the content presented in textbooks varies widely, and that many textbooks are of inferior quality, such instruction will often be inadequate.

Doyle notes that, "Analyses focusing on discourse properties and cognitive demands indicate that school texts are not clearly written and often unwittingly pose complex logical and inferential tasks for students (see Anderson et al., 1980; Frederiksen et al., 1978; Gammon, 1973; MacGinitie, 1976). In an intensive analysis of the suitability of eight beginning reading programs for low-ability students, Beck and McCaslin (1978) concluded

that many of the programs presented information to students in ways that were likely to cause confusion. In addition, the instructional procedures recommended to teachers were often convoluted and unnecessarily complicated for students. In a similar analysis of five basal reading programs, Durkin (1981) concluded that the emphasis was on practice and assessment exercises with little direct instruction in comprehension processes and that many of the topics (e.g., identifying referents for pronouns) were never explicitly connected to reading skills but rather were ends in themselves" (p. 46-47).

Students are often asked to read material that is too easy or too difficult for them. According to Doyle, Jorgenson (1978) reports that in examining the match between reading and social studies textbooks and students' reading ability at the third- and fifth-grade levels, 61% of the students were assigned to material easier than their ability levels. In fifth-grade social studies there was a single text for all students, and 85% of the students were required to learn from printed material that was above their reading ability. Students in reading were able to work independently, whereas students in social studies spent time soliciting help from the teacher and other students.

Organization of Curriculum in Early School Years

In a previous paper for the Commission, Good argued that even at the lowest grades the movement from grade to grade is characterized by many discontinuities. The home environments of most young children are very structured. Parents clearly communicate what the child is expected to do and about what behavior is acceptable and what is not. When the child enters nursery school, however, he or she encounters a very different management style. Most nursery schools are permissive and allow children freedom to which they may or may not be accustomed.

The transition from nursery school to kindergarten returns the child to a more structured management style. Kindergarten is characterized by common task structures and public evaluation of performance. In this regard, kindergarten is more similar to the home environment than is nursery school.

Beginning in first grade, all students in a class do not receive the same curriculum nor share a common set of learning experiences. First grade is distinctive because ability grouping usually begins here. Research indicates that from here on, students' elementary school experiences will be extremely varied. Instruction in low-ability groups focuses on drill repetition, in high-ability groups it more often relates to the meaning of material and the nature and application of ideas.

Curriculum Demands in Elementary, Secondary, and Higher Education

In a paper for the Commission, Ward, Mergendoller, and Mitman suggest that despite some public concern over the "transition" that students must make when they move from elementary school to junior high or middle schools, most students perceive the demands of elementary and junior high to be similar rather than different and have little trouble making the transition.

According to Ward et al., the curricula offered by junior high schools in the United States can be reviewed from three perspectives: (1) content covered; (2) cognitive complexity of learning tasks; and (3) social participation requirements students must understand and respond to in order to perform successfully in each class.

In their intensive study of one junior high school and its elementary "feeder" schools, Ward et al. found that the content being offered in the junior high was not more difficult from that which students received in fifth- and sixth-grade classrooms. In fact, the authors found that many

students were placed in junior high reading skills development classes in which the work was too easy. Furthermore, the grammar and composition components of the language arts curriculum repeated skills that students had extensively practiced in the upper elementary grades. The authors also point out that the seventh- and eighth-grade general mathematics textbooks used in this junior high school had not been updated to accommodate the increase in elementary school pupils' mathematical skills.

Ward et al. found that the students in their sample confronted a curriculum undifferentiated according to skill level, and that a great many teachers relied on worksheets as their fundamental curriculum. Such an instructional strategy forces students to learn material independent of the teacher and assumes that students can engage in self-instruction. The authors contend that the task assigned to students in many junior high/middle schools is likely to require little more than merely memorizing factual knowledge or comprehending simple intellectual procedures. They conclude from the research they reviewed that junior high students are seldom required to synthesize, analyze, or expand upon information presented by teachers.

Similar arguments have been presented about the lack of academic demands in secondary schools and higher education by Cusick (1981) and Neumann (1982). For example, in a paper prepared for the Commission, Neumann suggests that class attendance and selection of courses are becoming more optional and he argues that many colleges require little more than minimal reading, writing, and mathematical skills. It may be that only reading is absolutely essential in order to graduate.

Lower Grades: More Electives

In a news release describing Commission proceedings (School Board News, November 24, 1982) findings were discussed from a draft form of the report,

"A Study of High School Transcripts, 1964-1980." This study analyzes high school transcripts from two large data sets (over 12,000 students were studied). One file of transcripts includes a nationwide sample of 6,000 students (1961-1969) collected for a study at John Hopkins. The second data set is taken from a nationwide sample of 6,000 transcripts gathered at Ohio State University (1971-1981).

The comparison clearly indicates that students in the 1971-1981 sample elected to take fewer Carnegie unit courses (academic courses) and instead took more elective courses (courses such as driver education, training for marriage and adulthood, and vocational home economics). The article suggests that the transcripts give evidence of the presence of three tracks in schools: academic, general, and vocational. Students get different views of subjects on the basis of which track they are in. For example, in some courses a unit on taxation focuses upon how and why government systems work, but in other courses instruction in this unit concentrates on how to fill out property assessment forms, etc.

In the School Board article, Cliff Adelman is reported to have argued that the percentage of students on the "general track" increased from 12% in the late 60's to 42.5% in the late 70's. The study does not find a simple form of erosion of grade standards as many have reported. There is grade inflation in the sense that in the 1971-1981 sample there are more A's and B's than in 1961-1969, but there are also more D's and F's. As students continue in a sequence (e.g., from algebra to geometry to trigonometry) grades become higher. This observation leads to speculation concerning whether teachers grade easier or students perform better.

In the School Board News article, Alexander Astin is cited as reporting that there was a 40% drop from the sixties to the seventies sample in the

proportion of Carnegie units in foreign languages and government and a 25% drop in English. Astin suggests that the drop in English would have been larger if credits in remedial English had not been counted. Math and science units declined less (from 5% to 10%). Astin also notes that these declines in the number of academic courses taken are accompanied by correspondingly lower SAT scores. That is, until very recently student performance had been declining on both verbal and math portions of the SAT, but verbal scores have dropped more sharply than math scores (this, of course, corresponds to shifts in the curriculum).

There can be no question that content coverage and opportunity to learn are strongly related to student performance on measures like the SAT. If students do not take algebra courses or if they are not taught appropriate content when they do enroll in such courses, their performance will decline. However, there is still the question of what accounts for the decline in enrollment in academic courses at the high school level.

In part, students take more non-academic courses because they are offered and presumably students enjoy taking them. Students experience few if any negative consequences for failing to take more academic courses (i.e., they are not denied admission to "state universities"). The number of elective courses in some secondary schools is substantial. In a paper for the Commission, Cusick notes that in one school there are 30 different courses available in English. In this school students can choose from Shakespeare, mythology, or tradition and revolt in literature, music as expression, speech, yearbook, etc. Indeed, there are even three options for illiterate or marginally literate students! In addition to 30 courses in English, this school offers 16 courses in social studies, 12 in math, 15 in business, 10 in vocational training, 8 in science, 8 in art, 7 in music, and 3 in home economics.

But why does such diversity exist? Cusick argues that schools are always vulnerable to adding more curriculum because it is very difficult to define students' needs and, having no articulate view of what students' needs are, schools are always in a weak position relative to a group that has a clear idea and who is willing to argue it. Thus, the fact that diversity is apparent in secondary school curricula can in part be accounted for the vulnerability of the school curriculum, in particular to outside pressure groups.

Cusick suggests that the responsibilities of schooling are so constructed that administrators spend their time on attendance, discipline, and public relations. Specifically, he argues that schools are founded in the basic beliefs that the acquisition of positive knowledge is or can be made interesting and appealing to everyone; that schools should be comprehensive and, since they are publicly funded, they should respond to the needs of a diverse population. Thus, since schools must serve a large and diverse student population, administrators are under pressure to (a) secure the attendance of students who may have little interest in school, and (b) maintain order among this diverse population of students.

Given that administrators' attention is focused upon the structure of schooling, the day-to-day responsibility for curriculum falls to teachers who have two types of demands made on them. First, they must instruct and learn to get along with the students. Second, they should not burden already busy administrators with additional disciplinary problems. According to Cusick, it is ultimately the teachers who create the diverse courses to fulfill what they perceive to be the demands of students, and to meet their own needs as teachers and individuals.

He further argues that one possible negative side effect of fragmentation is that little emphasis in such a school system is placed upon

building and maintaining a community within the school. That is, satisfying individual needs consistently takes precedence over the preservation of community or school-wide norms. He writes, "And it may be as some have suggested that the community itself, serving a pedagogical end of inspiring and motivating students to do better and work harder, is something that public schools were too quick to discard. It may even be that while the public system offers broad advantages to those students sufficiently sophisticated or guided to take the best available, such a system might further disadvantage those who lack both sophistication and/or strong guidance. That would be a paradox; after all, the strongest argument for diversity and fluidity has been that they help extend education to the less advantaged. It would be unfortunate, as well as paradoxical, if the sum of it all further disadvantaged those people whom it was the intent to assist" (pp. 21-22).

Others have made similar arguments concerning the decline of performance expectations. For example, Tomlinson (1981) argues that in the search for equity and the legitimate need to instruct an ever increasingly divergent student population that educators over time become lax with regard to certain important conditions of learning. He argues his case:

> "Following the surge of underachieving children and ever-tightening restraints on their own behavior, schools gradually relinquished the necessary conditions for learning. These necessary conditions include teachers willing and able to teach, a curriculum that everyone can learn, order and stability in the learning environment, minimal distraction from the learning process, and children willing and able to learn what they are taught.
>
> These conditions <u>are</u> the requirements of an effective school: they are reliable and valid at most any time or place and with most

any child. I can think of no exceptions to these rules. Learning is more likely to take place in a tranquil context than in a chaotic one, in a distraction-free context than in one that diverts children's attention to other than the course of instruction, and in a context that provides youngsters with optimal time on task. Because modern schools provide these conditions less often than before, we have indeed strayed from the fundamentals--not from the curricula or content so much as from the context that learning requires" (Tomlinson, 1981, p. 373).

Thus, there are those who argue that both the conditions of schooling and the academic content of schooling have declined, and, ironically, it may well be that the students who have suffered the most from such declines are children from low SES homes.

Quality of Teaching: Subject Matter Assignments

Doyle states that risk and ambiguity are key concepts in understanding classroom situations. Ambiguity refers to the extent to which an exact formula for obtaining an answer is available. It is important to realize that ambiguity does not necessarily result from poor explanations by teachers; rather, it is an inherent feature of certain types of academic work. Risk refers to the stringency of the criteria a teacher uses to evaluate student performance and the likelihood that these criteria can be met on a given occasion.

Doyle argues that some tasks, especially those which involve understanding a higher-level cognitive process, are difficult for teachers and students to accomplish in classrooms. In performing such tasks students may face ambiguity and risk. When teachers make more complex assignments, they often have management problems resulting from delays and from the fact that a significant portion of the students may not be able to accomplish

the assigned work. Unfortunately, the usual emphasis on classroom management of group contingencies and on answering often focuses the attention of teachers and students on simply getting work done rather than on higher-level cognitive tasks. Doyle's analysis thus suggests that, in adddition to the influence of textbooks, which emphasize memory tasks, classroom environments have stable aspects that cause many teachers to emphasize such tasks (low risk, low ambiguity) over problem solving.

Doyle contends that in some cases what students do in classrooms (and their perceptions of what they are doing and why) may be discrepant with the actual task that the teacher has in mind. That is, students are practicing the wrong operations. For example, a teacher may spend much class time having students diagram sentences; however, the teacher might choose not to test whether students can apply this skill (e.g., students are required to write original sentences). In this case, from Doyle's perspective, having students practice diagramming sentences would have been an "activity" and not a task, since it was not functionally related to the intended outcome.

Doyle (1979) further notes that teachers have been found to praise inappropriate student responses. Reasons for such teacher behaviors may be laudable (e.g., to encourage classroom participation); however, the discrepancy between stated teacher behavior (give thoughtful answers) and accepted behavior (wrong answers) may teach students that the real task is to respond quickly and not to think. Such discrepancies between activity and task demands may communicate low expectations for student learning. In the section that follows we will examine more fully how teachers' expectations may influence student performance.

Conclusion

It is important for teachers to know how to select and adapt curriculum materials for their students. Through preservice and inservice education

teachers should be made more aware of student's needs and prepared to deal with them effectively. For example, teachers need a more thorough background in developmental cognition, especially in relation to curricula.

Because of limited time and the complex demands of schooling, teachers' present dependence on publishers' curriculum materials and teachers' guides is likely to continue. However, teachers' guides can and should be improved. Teachers, though, should depend on these guides only for planning, not for conveying instruction to students. Rather, teachers must know how to adapt materials for their students. In their role as instructors, teachers will have to learn to meet students' needs for advance organizers, integrating concepts, detailed explanations, corrections of persistent misconceptions, etc.

Teachers also need to know how classrooms operate as social systems (teachers have to deal with groups of students). In particular, they need to develop skills in designing academic tasks and instructional material to supplement textbooks and other published materials. Furthermore, we agree with Doyle that teachers need to think about academic work and become more aware of the various methods students use to avoid task demands while still accomplishing academic work (delaying, seeking unnecessary help from teachers, etc.). With this increased awareness, teachers can begin to devise ways to sustain task demands and thus have students use the cognitive processes which are intended for task accomplishment.

Teacher Expectations

Teachers vary considerably in how they use time, manage classrooms, mediate textbook and curriculum assignments, and in the extent to which they emphasize either meaning or drill-like activities. However, instructional variation can be found not only between classrooms (e.g., how two

teachers vary from one another in their classroom behavior), but also within classrooms (one teacher behaves in different ways toward subgroups of students in his/her class). For instance, some teachers who provide considerable feedback may evenly distribute their evaluative comments to students, but other teachers may provide feedback to only a few students in the class. Although some teachers fail to provide entire classes with appropriate content and stimulation, in many classrooms students perceived by teachers to be low achievers are the ones who receive inadequate instruction.

Much of the research conducted in the 1970's consisted of classroom observational studies aimed at determining what teachers do in their interactions with high- and low-achieving students. The extent to which teachers differentiate in their behavior toward students has been found to represent an individual difference variable, with some teachers varying their behavior more than others (Brophy & Good, 1974; Good & Brophy, 1980). Explanatory variables which indicate when and why teachers are likely to behave differently toward high- and low-achieving students have not been frequently studied (for exceptions see Cooper, 1979; Cooper & Good, 1983). It is not clear whether teachers who differentiate sharply in their behavior toward highs and lows do so because of personality variables (defensiveness, rigidity), school or classroom organizational factors, characteristics that individual pupils and groups of students bring to the classroom, or a combination of these and other factors.

Although the causes of differential interaction are not definitely established, it is clear that many teachers vary sharply in their interaction patterns with high- and low-achieving students. Brophy and Good (1974) estimated that about one-third of the classroom teachers who have been observed in related research have shown patterns of highly differentiated behavior toward high and low achievers. Teachers differentiate

their behavior toward students they perceive as high or low achievers in a variety of ways. (For a comprehensive discussion of these variables see Cooper and Good, 1983 and Good and Brophy, in press.) We will list here only a few of the ways teachers have been found to differ in their treatment of students: (1) calling on lows less often to answer classroom questions or to make public demonstrations; (2) waiting less time for lows to answer questions; (3) praising lows less frequently than highs after successful public responses; (4) criticizing lows more frequently than highs for incorrect public responses; and (5) not staying with lows in failure situations (providing clues, asking follow-up questions).

It is important to examine the implications of such teacher behaviors for low achievers. It seems that a good strategy for slow students who face such conditions would be not to volunteer or not to respond when called on, because such an instructional system discourages students from taking risks. To the extent that students are motivated to reduce risks and ambiguity--and many argue that students are strongly motivated to do so (see the paper prepared by Doyle for the Commission)--it seems that students would become more passive in order to reduce the risks of public failure.

Explanations for Differential Teacher Behavior

One basic cause of differential behavior is that classrooms are very busy and complex environments and it is difficult for teachers to accurately assess the frequency and quality of their interactions with individual students.

A second explanation involves the fact that much classroom behavior has to be interpreted before it has meaning. Research (e.g., Anderson-Levitt, in press) suggests that once a teacher develops an expectation about a student (e.g., the student is not capable of learning), the teacher

interprets subsequent ambiguous classroom events in a way consistent with the original expectation. Good (1980) maintains that most classroom behavior is ambiguous and subject to multiple interpretations.

A third reason why teachers differentiate more or less in their behavior toward high- and low-achieving students involves the issue of causality. Some teachers believe that they can and will influence student learning (for example, see Brophy & Evertson, 1976). Such teachers may interpret student failure as the need for more instruction, more clarification, and eventually increased opportunity to learn. Other teachers, because they assign blame rather than assume partial responsibility for student failure, may interpret failure as the need to provide less challenge and fewer opportunities to learn. Teachers who do not have a strong sense that they can influence student learning are therefore more likely to overreact to student error and failure (perhaps by subsequently assigning work that is too easy) than teachers who feel that they can influence student learning and that they are a partial cause of student failure when it does take place.

Another explanation for differential teacher behavior is student behavior. Students present themselves in different ways to teachers and these self-presentation styles may influence teacher responses. Dee Spencer Hall (1981) has noted that some students are able to time their misbehavior in such a way as to escape teacher attention, whereas other students who misbehave just as often are reprimanded considerably more frequently because the timing of their misbehavior is inappropriate. Carrasco (1979) suggests that students may demonstrate competence in a style that escapes teacher attention. According to Green and Smith (in press), the language some students use makes it likely that teachers will underestimate their potential.

Metz (1978) provides another illustration of how students may influence teacher behavior. She reports that students in low track junior high

classes like to do seatwork and dislike public interaction and classroom lecture. In part, low achievers prefer seatwork (and encourage teachers to assign more seatwork) because it presents less risk to them. We previously noted that teachers who do not possess management skills are especially likely to be vulnerable to student influence. Finally, McDermott (1976) found that in one classroom low achievers received less reading practice because they were interrupted frequently by other students during reading instruction. The interruptions were partly due to the fact that the low achievers' behavior during reading group allowed other students to interrupt them. Hence, students appear to be an active part of the expectancy cycle. The behavior of some students encourages and reinforces teaching efforts; whereas other students' behavior discourages teaching.

Green and Smith (in press) report that teachers use linguistic performances as one basis for evaluation of student performance. Thus, students must know academic information as well as how (and when) to display academic knowledge. Being accurate was not enough; students needed to present information in appropriate form at the appropriate time. Students have to know both the form and the content required. Thus, because of linguistic deficiencies and/or lack of awareness of social cues, some students may have much more difficulty convincing teachers that they know the material than do other students.

We have suggested several reasons why teachers may behave differently toward high- and low-achieving students: the complexity of the classroom; the ambiguous nature of student performance; teachers' beliefs about causality (their ability to cause or to influence student performance); and students' behavior. Obviously, these are dynamic influences and they often occur in combination. For example, Confrey and Good (in progress) note

that in one class students were placed in either a high or low mathematics group on the basis of their teacher's interpretation of the students' performances during the first weeks of mathematics class. The assignment of students to the high group was based in part upon the speed with which they were performing mathematics tasks.

Ironically, a week of observation indicated that students in the low group often watched what the teacher was doing in the high group and in interview sessions they indicated that they observed the highs because they wanted to get a step ahead and learn what the high group was learning. Unfortunately, because the teacher was interested in speed of performance and because lows spent time watching the other group rather than doing their own seatwork, their incomplete seatwork assignments reinforced the teacher's original expectations and supported the belief that the assignments to high and low groups were correct. Students' interpretations of their classroom roles and their behavior influenced and maintained teacher expectations and behaviors.

Student Passivity: Role Confusion

Recent research suggests that teachers vary widely in how they react to student problems and this variation may make it difficult for students to understand what is expected of them. As noted above, studies show that some teachers criticize low achievers more frequently than highs per incorrect response, and praise lows less per correct answer than highs. In contrast, other teachers praise marginal or incorrect responses given by low achievers. These findings reflect two different types of teachers. Teachers who criticize lows for incorrect responses seem to be basically intolerant of these pupils. Teachers who reward marginal even wrong answers are excessively sympathetic and unnecessarily protective of lows. Both types of teacher behavior illustrate to students that effort and

students that effort and classroom performance are not related (Good & Brophy, 1977). Over time, such differences among teachers in the way they praise low achievers may reduce low students' efforts and contribute to a passive learning style.

Other teacher behaviors may also encourage student passivity. Low students who are called on frequently one year (the teacher believes that they need to be active if they are to learn), but are seldom called on the following year (the teacher doesn't want to embarrass them) may find it confusing to adjust to different role definitions. Ironically, these students, who have the least adaptive capacity, may be asked to make the most accommodation as they move from classroom to classroom. The greater variation in how different teachers interact with lows (in contrast to the more similar patterns of behavior that high students receive from different teachers) may be due to lack of agreement among teachers about how to respond to students who do not learn readily.

Even within a given year low achievers must often adjust to more varied expectations. This may be true in part because many lows have several teachers (in addition to the regular teacher they may have a remedial math, reading, or speech teacher). Ironically, these students may receive less and/or different instruction because of attempts to provide them with extra assistance. Hill and Kimbrough (1981) studied pull-out instruction in schools that operated four or more categorial (special need) programs. They found that pull-out programs posed problems for students who received special assistance as well as for regular teachers, because, due to scheduling problems, special programs were replacing, not supplementing, the core curriculum for many students.

Even when students did receive both regular and supplemental instruction, they were still not well served. Hill and Kimbrough found that in

several cases incompatible teaching methods and materials were used in special and regular classrooms. Hence, many children became confused by conflicting approaches taken by special and regular teachers, and conceptual learning was especially difficult for these students.

Grouping and Expectation Effects

Much of the recent research on teacher expectations examines teacher behavior toward individual students. However, there is growing evidence that students may also be affected by grouping, which often results in differential instruction. Confrey and Good (in progress) observed instruction in seventh-grade English and mathematics classes and interviewed some students in high and low groups in each class. They found that content presentation to low-achieving students was often characterized by fragmentation of material, repetition, little presentation of theory, and few integrating concepts. Students in low groups in classes grouped by ability spent much of their time on repetitive drill activities which were inadequately presented and discussed and not sufficiently related to relevant integrating concepts. Students were unlikely to receive the intended benefit from these activities, even if they did them correctly.

Eder (1981) found that students in one first-grade class who were likely to have difficulty learning to read were assigned to groups whose social context was not conducive to learning. In part, this was because assignments to first-grade reading groups were based upon kindergarten teachers' recommendations, and a major criterion of placement was the maturity of the students as well as their perceived ability. Eder observed reading group behavior throughout the year and found that the teacher discouraged interruptions of students' oral reading turns within the high group but not in the low group. According to Eder, the teacher may have been concerned with maintaining the interest of the low group during other students' reading

turns (in general, their reading turns tended to be longer and filled with more pauses). The teacher may also have thought that lows had less intrinsic interest in the material; therefore, she was more willing to encourage most forms of participation or responses from low students but demanded more appropriate behavior and responses from highs.

Because the most immature, inattentive students (as indicated by the kindergarten teacher) were assigned to low groups, it was almost certain that these groups would have more managerial problems (e.g., distractions) than others, especially early in the year. Indeed, because the teacher was often distracted from a student reader in the low group who was responding (because of the need to manage other students in the group), students often provided the correct word for the reader. Readers were not allowed time to ascertain words on their own, even though less than a third of the students interviewed reported that they liked to be helped, and most thought this help interfered with their learning. Eder's work indicates that low students had less time than highs to correct their mistakes before other students and/or the teacher intervened.

Eder also found that students in the low groups spent 40% of their listening time not attending to the lesson (versus 22% in the high groups). Low students frequently read out of turn, adding to the general confusion. Eder reports twice as many teacher "managerial acts" in the low groups as in the high groups (157 versus 61), and found that turn interruption increased over the course of the year. Due to management problems, frequent interruptions, and less serious teaching, low students may inadvertently have been encouraged to respond to social and procedural aspects of the reading group rather than academic tasks.

It is difficult to conceptualize and describe what students learn in school, especially from the examination of practice in one classroom.

However, it seems plausible that one of the effects of being in high and low reading groups in the classroom studied by Eder was that students learned different norms for attention. Students in the low reading groups were encouraged to be inattentive; whereas, students in the high group learned to attend to instruction.

Inappropriately low performance expectations are often associated with good teacher intentions, but such expectations still have harmful effects. As a case in point, Bob Germain (personal communication) has found instances of too much structure and direction. He found that textbooks were giving cues to poor readers about where they could find the answers to questions that appeared at the end of the chapter. Some low-achieving students simply read a particular page where they could find the answer rather than attempting to read all the materials. The cues embedded in the text materials were probably provided to help slow readers (in order not to overwhelm them). However, the practical effect was probably to encourage less reading and less thinking.

Teaching Dilemma

Clearly, teachers can expect too much or too little in their instructional interactions with students. This dilemma also has to be addressed by curriculum specialists who write textbooks and by policymakers. There are many instances in which teachers need to assign different types of material to high and low achievers. We are not suggesting that teachers treat students the same way in all circumstances. Teachers can make instructional mistakes by treating students too much alike, as well as too differently. However, we believe that in general, existing evidence suggests that teachers are more likely to expect too little from students that they perceive as having limited ability.

Student Influence

Although there is conclusive evidence that teachers significantly affect student learning, student motivation and effort are also important aspects of classroom performance. As we have argued, student behavior influences teachers' perceptions of students and in some cases affects the quality of instruction students receive. More directly, student perceptions of teacher behavior and student motivation are likely to influence how much effort students expend in the classroom (e.g., when classroom tasks are ambiguous and/or complex do students perceive them as a challenge and think an work or do they perceive such tasks as a threat and negotiate with teachers?).

There is increasing evidence that students' perceptions and self-perceptions are important sources of information about classroom learning. For example, Pace's study (reported earlier in the paper) demonstrates the utility of students' reports of their effort. Pace found that the quality of student effort was important in predicting achievement goals of college students.

Still, effort is at least important in a relative sense, even though less absolute effort may be necessary today for students to receive high grades. As a case in point, Neumann notes that positive informal interactions between students and faculty were critical in explaining success of some students in community colleges . . . the institutions with the highest rates of attrition in our system of higher education.

One wonders how students perceive standards in higher education and how their perceptions influence performance. Too little research has attempted to answer such questions and we need to more systematically study how students perceive and respond to academic demands. How students respond to these expectations should be an important research agenda in the

1980's. We now turn to a discussion of what we know about student perceptions.

Student Perceptions of Schooling

In a thorough review and integration of research on student perceptions of schooling, Weinstein (in press) examines studies of students' perceptions of teachers, other school personnel, peers, causes of behavior, the classroom, and the school.

Perceptions of teachers. Concerning perceptions of teacher behavior, classrooms vary in the extent of differential treatment perceived by students. There is evidence that students are highly sensitive to variations in teacher treatment (interaction patterns and nonverbal messages) within classrooms. Through varied treatment, students infer teacher expectations for academic performance. Moreover, differential relationships hold between teacher expectations, student expectations, and student achievement in classrooms where greater differential treatment is perceived than in other classrooms (e.g., Weinstein & Middlestadt, 1979a; Weinstein et al., in press; Brattesanni et al., 1981). That is, in classrooms where students were aware of teachers' differential treatment of high and low achievers, students' own expectations for themselves more closely matched the teachers' expectations, and the teachers' expectations for their students more clearly predicted student performance.

Studies of students' perceptions of teacher instructional behavior (e.g., Peterson & Swing, 1982; Winne & Marx, 1980, 1982) suggest that student perceptions and cognitions during instruction can mediate the effects of instruction on student achievement. Evidence indicates that students often may not perceive what teachers intend. Also, some students who appear to observers to be attending to lecture or class discussion

reported in interviews later that they were actually thinking about other things, such as how they would perform in relation to other students.

In some classrooms, students may perceive more differential teacher behavior towards highs and lows than is indicated by behavioral records made by classroom observers (Cooper & Good, 1983). It is not clear whether students report greater differences in teacher behavior because they have more cues and are more sensitive to teaching acts than observers or because students "over-react" to certain cues. Some students are likely reliable observers of classroom events and others are probably not perceptive. Still, there is evidence that students can provide valuable insight about teaching (Cooper & Good, 1983; Weinstein, in press). Just as teachers may act upon their beliefs and perceptions (e.g., they believe an average student is below average), students also react according to their perceptions of teachers' behaviors and intentions (Weinstein, in press).

Perceptions of ability. Developmental literature suggests that young children perceive ability or intelligence as a changeable entity which can be improved with effort. They also seem to rely on absolute and individual standards rather than norms to assess ability. Bumenfeld and colleagues (1982) argue that young children's self-perceptions are thus biased in a positive direction.

However, there is much evidence that as students get older, classroom conditions (feedback patterns, reward structures) which increase the differences between high and low achievers affect student's perceptions of ability, and their perceptions of their ability more closely match their teachers' perceptions. Students also evaluate their own abilities by comparing themselves with peers during the daily performance of tasks in classrooms. The evaluative cues available to students, however, differ according to the structure (e.g., whole-class, group, or individual; lecture,

seatwork) and climate (e.g., extrinsic vs. intrinsic reward structure) of the classroom and the school. A climate with high and flexible expectations, varied tasks and opportunities for evaluation, a focus on task mastery, and a belief in the changeability of intelligence can provide a context in which students can evaluate themselves on several dimensions and feel positive about their potential for future success.

Achievement behavior has been the most frequently studied process in relation to students' perceptions of the causes of behavior, particularly in an attribution framework. Applications of attribution theory to classrooms will have to consider how success and failure judgments are made by students. Recent work suggests that children's definitions of success vary across individual pupils, tasks, and situations (Frieze, Francis, & Harrusa, 1982). One study (Frieze & Snyder, 1980) of the attributional patterns of elementary students for success and failure in four situations showed that the achievement situation elicited different causal mechanisms than other situations. Effort was most important for school testing situations, while ability was seen as critical to finishing an art project or winning in football.

Perceptions of Learning Activities

Students' perceptions of their learning activities vary widely. In a literature review prepared for the Commission, Steinberg and Wagner note that many young children and some older students are deficient in metacognitive skills, particularly in four areas: (1) predicting the difficulty of a task; (2) assessing the incomprehensibility or incompleteness of task directions; (3) planning ahead and using available time wisely; and (4) monitoring their progress and in evaluating their own performance. Many students may therefore need some assistance in developing these skills.

Unfortunately, as was argued earlier (see paper by Ward et al.), there appears to be no systematic effort to teach these skills in public schools.

Student Motivation

Commission papers by Deborah Stipek and Martin Maehr have dealt with the issue of student motivation. In this section we will briefly summarize their papers. Stipek argues that we have traditionally pursued an external reinforcement model of motivation in education. She believes that the use of reinforcers is understandable, because they are often effective in controlling achievement-related behavior. However, most teachers are not trained to use rewards effectively.

Practical problems with rewards and punishment. Traditional rewards used in most American classrooms are not universally effective with younger elementary students and adolescents, who may not value high grades. Another problem with external reinforcers is that their effectiveness is short lived. Furthermore, in the upper grades where assignments are larger, less frequent, and take longer to complete, there are fewer opportunities for students to receive rewards. In college many rewards are far removed from the immediate situation requiring achievement behaviors.

Rewarding achievement in the classroom can also diminish children's desire to pursue achievement-related activities outside schools. For example, if students have learned to expect external reinforcement for reading at school, they may not perceive the intrinsic benefits of reading and thus will not read at home.

Punishment can also have negative consequences for achievement behavior. Fear of punishment, such as public humiliation or low grades, can cause anxiety, which seriously hinders learning if it is extreme. In fact, many children spend more effort trying to avoid punishment than they do

trying to understand material or learn new skills (consider the passivity model presented earlier in the paper).

The discovery of cognitions. Stipek notes that cognitive theorists have modified traditional reinforcement theory by suggesting that behavior is determined by students' beliefs, not simply by whether they have been rewarded or punished in the past. For example, Rotter (1966) explains that it is not the reward itself that increases the frequency of behavior, but a person's general beliefs (locus of control) about whether reinforcement is contingent on his/her own behavior (e.g., ability, effort) or factors beyond the person's control (luck, teacher bias). There are numerous studies which demonstrate the link betwen an internal locus of control and increased academic achievement.

Perhaps the most important determinant of children's interpretations of the causes of their successes and failures is whether they believe they are competent (i.e., possess the ability to obtain desired reinforcement). Nicholls (1981) states that self-confident individuals are more "task-oriented" than "ego-oriented."

A final cognitive factor which has been given little attention by traditional reinforcement theory is the degree to which individual children value various kinds of reinforcers in achievement settings. Differential values partly explain age differences in the effectiveness of reinforcers.

These modifications in traditional reinforcement theory indicate that teachers should use rewards and punishments sparingly. Recent, related research indicates that teachers who have both pleasant and productive classes use comparatively little praise and criticism (Good, Grouws, & Ebmeier, in press).

Intrinsic motivation. In 1959 White proposed that successful mastery of learning activities is naturally reinforcing because it results in

feelings of competence. Several other theorists also stress that external rewards are not necessary for learning, and that external reinforcement can have a negative effect on achievement behavior because such reinforcement is often unavailable outside the classroom. Even within schools extrinsic rewards can impede achievement behavior by causing a student to focus on the reward rather than the learning task. Furthermore, external reinforcement is not available in all educational settings.

Stipek contends that three motivational characteristics should be encouraged in schools. First, positive, achievement-related cognitions that result in adaptive learning behaviors and maximum effort should be fostered. Second, schools should maintain children's intrinsic motivation to learn so that they will continue to learn in higher education institutions or out of school. Tasks that cannot be presented in a way that appeals to students' intrinsic competence motive should at least be seen by pupils as instrumental to meaningful personal goals. Third, the educational environment should encourage independent, self-directed learning strategies that will benefit children in and out of structured educational contexts. Stipek, however, notes that for those three conditions to be met it may be necessary to reduce class size in grades 1 and 2. Similar arguments were made by Good in a paper for the Commission.

The Status quo. Stipek suggests that before children enter school they are intrinsically motivated. However, as their achievement efforts are evaluated (usually by a comparative standard) and compared to the efforts of their classmates, their perceptions of their competence and their expectations for success generally decline over the elementary grades. External rewards and less choice in learning activities also contribute to a decline in intrinsic motivation. In many respects these

changes are necessary. Comparisons among children are unavoidable, children will view many school tasks as irrelevant, and it is highly unlikely that children will "choose" to engage in many important academic tasks. Nevertheless, most classrooms could be improved so as to increase children's motivation to learn.

Maintaining positive achievement-related cognitions. Stipek argues that to maintain a positive attitude towards achievement, children should be graded according to how their performance compares to their previous performance or to standards set for them (mastery learning), rather than according to how their performance compares to that of others. Success is thus attainable to low-ability students, and high-ability pupils always have higher standards to aspire to.

Educational programs based on a mastery model have often resulted in relatively high levels of effort and achievement. However, these programs have not been widely implemented in the United States, perhaps because they are inconsistent with the economic and political context of American schools or with other socializing influences (e.g., parents, cultural background, sports). Sometimes the effects of "individualized" programs are mediated by students who introduce normative evaluation by comparing themselves with classmates in terms of their relative positions in the curriculum.

Although some may argue that children will have to function in a competitive environment as adults, Stipek believes that the benefits of competition in our society are seriously overrated, and that cooperation is more likely than competition to further most persons' aspirations. Others have made similar arguments, and there is evidence that under certain conditions cooperative learning can enhance student achievement (e.g., Slavin, 1981).

If teachers do introduce competition, they should try to avoid serious, negative achievement-related cognitions that could occur. For example,

pupils can be allowed to select tasks at an appropriate difficulty level, or competition among teams composed of students of varying abilities could be used. Conversely, classroom structures which maximize opportunities for performance comparisons (e.g., whole-class recitations) can produce negative achievement cognitions for some pupils (Bossert, 1979).

However, the teacher is probably a more important factor than classroom structure in determining achievement-related cognitions, particularly because the teacher can minimize the negative implications of self-assessments of relatively poor achievers. More specifically, teachers can insure that all students do not interpret errors as failure. Rather, errors should be approached as a natural part of learning. In this context, teachers must be able to differentiate errors due to low effort or sloppiness from errors due to lack of mastery. Teachers should also emphasize a wide variety of academic tasks, so that students who do not excel in academic areas which emphasize reading skills will have opportunities to succeed publicly in other activities (see for example Cohen & Rosenholtz, in press). According to Stipek, high expectations for success within a particular academic context do not preclude realistic occupational aspirations.

Maintaining intrinsic motivation. Though teachers cannot rely solely on an intrinsic motivational system, they can more frequently utilize children's intrinsic motivation and minimize the negative long-term effects of external rewards. For example, teachers can design learning tasks that are appealing to students as well as appropriately challenging. Tasks should be presented with an emphasis on developing competencies rather than external evaluation, and thus anxiety about potential failure is minimized.

In cases where tasks are not intrinsically motivating, teachers will have to use alternative means of motivating children. In some cases, intrinsic motivation can be brought about by instrumentally linking the

immediate task to a student's long-range goals or to another activity that is more appealing. However, teachers should avoid making rewards (e.g., going out for recess) arbitrarily dependent upon completion of an academic task.

In situations where external reinforcement is necessary, teachers should emphasize the information value of a reward (grades should be given along with feedback to students about their skill attainment). Likewise, gratuitous, noncontingent rewards are not advisable. Rather, reinforcement should be contingent on some specific, clearly defined performance standard. Stipek also argues that children should be taught skills for self-evaluation and realistic personal goal setting.

Teacher variables. She suggests that several teacher behaviors are related to increased levels of student motivation: enthusiasm for teaching; positive expectations for student performance; and students' respect for the teacher. Teachers should also communicate positive regard to each child, regardless of the student's academic performance. This may be one of the most important factors in children's willingness to take academic risks.

Conclusion. The ideas presented in Stipek's paper are not counter to an emphasis on basic skills; rather, the more demanding the task, the more important are intrinsic motivational factors. Many highly capable students (especially females) are reluctant to attempt academic subjects like advanced science and math, in part because they have learned to value high grades over an academic challenge. Even as basic a skill as reading is associated with external reinforcement. However, even high school students who have always experienced a competitive reward structure can be reacquainted with the pleasures of learning. In general, the classroom implications of Stipek's views are consistent with the issues raised in the active

teaching model (e.g., focused goals, emphasis upon progress instead of social comparisons, relaxed learning environments, etc.). However, Stipek places much more emphasis upon learner choice and actively teaching students to direct their own learning than does the active teaching model.

Policy implications. The recommendations Stipek makes are principles, not prescriptions. They must be adapted and implemented by each teacher according to his or her special strengths and teaching style, as well as to the characteristics of students in the classroom (ability, cultural background, age).

Many of the recommendations are not easy to implement, and ongoing inservice training is crucial so that teachers can share ideas and strategies and learn about recent research in achievement motivation. Likewise, educational researchers must be encouraged to communicate their findings in ways that are understandable and useful to teachers. Administrators must be willing to give teachers time off from teaching so that they can participate in inservice programs. Reduced class size for the first and second grades would facilitate the application of intrinsic motivational principles.

The potential gain in student achievement seems to outweigh the price which is attached to these policy recommendations. Stipek's view, however, is that attracting talented individuals to the teaching profession will ultimately have the greatest effects on students' motivation and excellence in education.

In another paper on motivation prepared for the Commission, Maehr contends that at present the public media are repeatedly reminding Americans that they are falling behind other nations in industrial productivity, science, and technology. At the same time there exists a fear that low achievement in the schools may be a cause of this decline. Although the

role of the schools in the currently perceived crisis is unclear, there is increasing evidence that public schools are not all that we want them to be.

Concerns about improving achievement naturally lead to questions about motivation. Walberg and his colleagues have found that motivation (narrowly defined) accounts for between 11% and 20% of the variance of classroom achievement. A meta-analysis of 40 studies (Uguroglu & Walberg, 1979) indicated that although the correlation between motivation and achievement was .07 in the first grade, it rose to .44 by the end of the twelfth grade. It may seem that motivation is only a minor explanatory variable; however, most of the variance in achievement is attributable to factors over which schools have little control (e.g., social background). Although seemingly small, the variance due to motivation can be acted upon, and it is a critical variable.

In his paper Maehr summarizes the literature on motivation relating to achievement. He explains how values, ideology, and various cultural patterns may affect classroom performance, with an emphasis on what cultural patterns may enhance achievement motivation in classrooms. Here we can only summarize some of the major definitions, conclusions, and recommendations that he offers.

Motivation Defined

Maehr suggests that motivation relates to five overlapping behavioral patterns:

(1) Direction. The apparent choices that individuals make between behavioral alternatives suggest motivation inferences.

(2) Persistence. When a person concentrates uninterrupted attention on the same task or event for varying periods of time an observer is likely to infer varying degrees of motivation.

(3) Continuing motivation. The "spontaneous" return to a previously encountered task or task area on one's own without apparent external constraint to do so suggests powerful motivational forces.

(4) Activity. Some persons seem to be more active than others; they do more things and seem to have more energy. Physiological factors are relevant to activity in many instances, and it is a more complex and less reliable indicator of motivation than the first three behavioral patterns. Furthermore, in most classroom situations assumed differences in motivation are not due to activity, but to direction.

(5) Performance. If performance cannot be readily explained in terms of variation in competence, skills, or physiological factors, then a motivational inference is frequently made. For example, teachers can cite instances where good students slump and slow students show marked improvement. Performance level is not a pure measure of motivation; rather, it is a product of a variety of factors, including a combination of the four behavioral patterns reviewed above.

Motivation as Personal Investment

When the behavioral patterns discussed above are observed, one might suggest that a person is investing his/her personal resources in a certain way. The image is primarily one of distributing resources, and the emphasis is on the direction of behavior, on the choices and preferences exhibited. However, one cannot rule out the existence of differential individual levels of motivation. Personal investment thus refers to the possibilities that persons may vary both qualitatively and quantitatively in motivation.

Maehr suggests that teachers should not assume too quickly that a child simply lacks motivation. Rather, they should consider that the classroom situation is simply not eliciting his/her effort.

The Motivational Cycle

One way of defining the role of motivation in relation to other processes and events is to describe important aspects of a typical motivational cycle in a classroom setting. First, motivation is viewed as a primary antecedent of performance level. However, motivation is in turn affected by performance, particularly by how that performance is appraised. Second, motivation does not typically affect performance in a direct and simple manner. Other factors such as skill, task organization, and interpersonal variables (e.g., peer distraction) are equally, if not more, important. A third feature of the cycle is that performance usually results in outcomes. It is the outcome as perceived by the student which re-enters the motivation cycle. The core issue of motivation in relation to school achievement is not whether or not a student is motivated, but whether the student is motivated in a desirable way.

What Determines Motivation and Personal Investment?

Personality

In reviewing the research on personality and motivation, Maehr suggests that there are several basic conclusions that can be reached. First, there is a continuing effect of previous experiences on the way one approaches achievement situations. In particular, beliefs about one's ability to perform certain tasks are critical. So are various acquired beliefs about what is valuable. These basic motivational orientations are often formed outside schools and not always easily altered by teachers. Teachers can, however, affect these orientations to some degree.

The Classroom Situation

The expectancy dimension. Social organization (norms, roles, status) occurs in classrooms. It is often peer initiated and controlled. The

social group usually involves a general norm for appropriate levels of achievement. The role that a student plays in a group is accompanied by certain expectations for achievement, and these expectations in turn affect achievement effort. Higher status students are encouraged to achieve, and lower status pupils are discouraged. Another type of expectation is conveyed by teachers. Research suggests that the expectations teachers hold relate to the quality of interaction they have with students, and in some cases they serve as self-fulfilling prophecies.

Task dimensions. A task may have structural features that affect motivation. Interesting tasks which possess an optimum level of uncertainty tend to be attractive. Further, a task may have specific meaning in a particular socio-cultural context. One's social or cultural group may define it as desirable, undesirable, or irrelevant. Success and failure in the performance of a task are also critical task dimensions. It is the child's subjective definition of success that counts, and this definition is a function of the goals that the child holds in the situation.

Related to success and failure, it appears that the way performance is appraised may have important and unintended consequences. Several studies (e.g., Fyans et al., 1981; Hill, 1980; Maehr, 1976) indicate that while external evaluation (grades, tests) may temporarily increase achievement, it also has negative effects on continuing motivation (Maehr, 1976) by impeding the student's development of more intrinsic, task-related goals.

Maehr suggests that to understand classroom motivation it is necessary to study the sociocultural context of society. He cites the work of Fyans et al. (in press) who have conducted intensive studies of the meaning of success, failing, and achievement in over 30 cultural groups. Fyans et al. found a wide and general recognition of a particular form of

achievement which emphasizes work, knowledge, freedom, initiative, and effort. Groups which scored high on this cross-cultural factor (the U.S. was one) seem to view success in terms of demonstrating independent competence. Groups who scored low (e.g., Rumania, Poland, Sweden) held goals associated with retaining social ties and enhancing interpersonal relationships. Thus, a loss in the "achievement ethic" or "work ethic" does not seem to be a cause of lower school achievement in the U.S.

Social organization and structure. Among these variables are the procedures required to move up the socioeconomic ladder. In the U.S. the slowing of geographical mobility leading to new opportunities and the aging of our society may have negative effects upon educational achievement and motivation.

On the other hand, research on family size and achievement indicates that the recent decrease in birth rate and family size may result in higher achievement scores. However, there is no reason to assume that fewer children will automatically receive more attention in school. In fact, current evidence indicates that Americans are less concerned with schooling than other highly developed societies (e.g., Japan). More specifically, pupils in U.S. schools spend less time in school and on school-related tasks.

Suggested Changes

Maehr's suggestions include the following:

(1) Society as a whole, and parents in particular, must communicate to students that achievement is important.

(2) A "return to basics" is not an appropriate solution to the problem of excellence, because it implies minimal standards and procedures that reduce motivation, particularly of the best students.

(3) Another easy solution which is likely to have negative effects on motivation stresses greater control of student behavior. Control which removes responsibility from the learner will definitely reduce motivation.

(4) Related to greater control is the possibility of establishing extensive examination procedures. As with other factors which emphasize external control of learning, such procedures are problematic because they work against creativity and continuing interest in learning.

(5) Perhaps educators should consider a more positive approach to motivation and simply make school-related activities and achievement "lively behavioral options" for students. One possibility that merits more interest is that of increasing the length of the school year and school day. Current U.S. practices reflect the needs of a rural society, and students in Japan and Russia spend more time in educational and related activities than do U.S. pupils.

(6) Finally, the parent(s) must be involved in a significant way with the child in furthering the schooling process. Parents seem currently turned off to schools. Time will be necessary, but parents will also need to receive information about how to help children maintain attitudes and behaviors which lead to achievement.

Implications of Student Research

The descriptions of student perceptions and motivation reviewed above are informative and document the need to study student variables more extensively. However, the value of this information for classroom practice is not entirely clear. In part, this is because student variables have been studied somewhat independently of teacher and task factors. Still, it seems that two broad themes emerge from this review: (1) that students lack self-monitoring skills and that (2) schooling practice does not always

construct classroom experiences so that student motivation (effort) and achievement are correlated.

Lack of Self-Monitoring Skills

Students appear to be deficient in certain skills that are related to motivation. For example, Neumann argues that too many college students cannot manage their time and evaluate their own work. Cusick informs us that students are not prepared to choose wisely from the variety of electives available in secondary schools. Sternberg and Wagner illustrate that many students lack basic metacognitive skills. Such considerations prompt us to ask if and when such skills are taught. It seems unlikely that students could learn time management, self-evaluative, and personal goal setting skills indirectly from school experiences. Neither are such skills taught on any systematic basis. Ward, Mergendoller, and Mitman's work also provides evidence that students lack independent learning skills and that schools do not attempt to teach these skills.

In an interview study by Ward et al., many junior high school students reported that getting work done and turning it in on time were the two essential requirements for successful performance. Only a few students stated that accuracy or quality of the work mattered. Furthermore, classroom observation indicated that teachers rarely stated explicitly the criteria they used to judge quality of performance. As a result, only more talented students realized that quality of the work was important.

Lack of Relationship Between Student Motivation and Achievement

An interesting and important proposition that cognitive motivational theorists posit is that one's perception of progress on an important outcome measure is a critical determinant of performance. Concerns for helping students to become more active, independent learners are implied in

the expectation and active teaching sections of this paper. Systematic teaching that focuses upon meaning and conceptualization can facilitate achievement, but care has to be taken that learners are asked to assume some initiative for learning and that teachers encourage (demand) more initiative from students as they mature. Students need to develop learning skills as well as mastery of conceptual information as they progress through school.

We find the results of Uguroglu and Walberg's (1981) review of motivational research (cited by Maehr) interesting yet disturbing. This review indicated that student motivation and achievement were correlated only .07 in the first grade but .44 in secondary schools. There are obvious problems associated with measuring student motivation and achievement, particularly in the first grade; however, one wonders why student motivation is more strongly related to achievement in the twelfth than in the first grade.

From casual inspection, it would seem that rewarding student effort (as Maehr and Stipek suggest) should be an important goal of schooling and that there should actually be a higher correlation between effort and achievement in the early years. If, as Stipek contends, young children come to school with intrinsic motivation to learn, why are their motivation and achievement not more highly correlated?

We suspect that the low association between motivation and achievement during the first few years of schooling is due to the fact that many students are assigned prematurely to ability groups for reading. As a result, students assigned to lower groups receive less instruction than they should.

Affecting Motivation through Structural Change

In a paper for the Commission, Good argues that premature assignment to ability groups affects the educational lives of children from all

socioeconomic levels as well as all racial and ethnic groups. It is important to note that the influence is relative, not absolute. That is, in the richest school districts it is not uncommon that the children of bright, talented, and successful professionals are placed in the bottom reading group, even though they may be competent readers (in some schools virtually all students come to school reading but are still grouped). Hence, students placed into the low group are taught with a group of students that are relatively less talented (even though students in the low group in one school district would be considered model students in another), suffer status differences in the class, and perhaps pick up subtle cues from peers, parents, and teachers that they have a problem ("Are you perhaps not trying hard enough?"). It seems that such children are prime candidates to become "under achievers" because it may be easier to be passive and to feign indifference rather than to try and to risk failure. One wonders how much potential and creativity are wasted by the unnecessary and premature assignment to ability groups in first-grade classes.

Also, it should be noted that because of group placement these students suffer from the fact that they cannot work with students who have somewhat better social and academic skills (e.g., skills for obtaining information from adults). If allowed to work with these students who are effective role models, it is likely that talented youth who are placed into low groups would acquire much more useful social information than they do presently (e.g., learn how to ask a question in a way that the teacher answers and does not perceive the question as needless or aggressive; learn when not to ask questions; learn how to get information from other sources, as well as how to "self-motivate" and "self-evaluate").

For these reasons Good has argued that serious consideration be given to smaller first-grade classes and that high quality reading instruction be

given to all students. Similarly, in her paper for the Commission, Stipek advocates reductions in the size of first- and second-grade classes so that teachers can design appropriate learning environments that are more consistent with the motivational and learning needs of young children (i.e., classrooms that de-emphasize rewards and needless competition). Even if it means larger class sizes in fifth- and sixth-grade classrooms, we suspect that smaller first-grade classes would offer more instructional opportunities for helping students to develop both cognitive (reading) and independent learning skills.

Conclusion

The particular school a student attends and the teachers and groups of students that he or she encounters are important. Although some critics have argued that most schools and teachers are similar, we have demonstrated that what a student learns is substantially affected by the school, classroom, and teacher he or she is assigned to.

In this paper we have described some important aspects of schooling and their relationship to achievement: (a) time utilization, (b) management, (c) curriculum content and academic tasks, (d) how actively teachers teach, and (e) the expectations and academic standards that teachers hold for their classes and for individual students. Not only do teachers vary across these interrelated dimensions, but these aspects of classroom life have been related to student achievement.

There is also variation among students in traditional academic skills, motivation, and in a variety of social (e.g., ability to obtain needed information from adults) and self-management abilities (e.g., task selection, time management, self-evaluation) needed to accomplish school tasks.

Instructional Demands

We know from research on teaching that most teachers need to spend more time actively instructing all students. First, they need to expend considerable effort early in the year conveying to students both academic and behavioral classroom rules and procedures. After students have internalized these rules, teachers should subsequently monitor student behavior consistently. According to Brophy (in press), a comprehensive approach to classroom management must include "attention to relevant student characteristics and individual differences; preparation of the classroom as an effective learning environment, organization of instruction and support activities to maximize student engagement in productive tasks; development of a workable set of housekeeping procedures and conduct rules; techniques of group management during active instruction; techniques of motivating and shaping desired behavior; techniques of resolving conflict and dealing with students' personal adjustment problems; and the combination of these elements into an internally consistent and effective system."

Some teachers need to concentrate a greater proportion of instruction to demonstrating to students the meaning of concepts and the relationships among concepts (i.e., less time in poorly defined seatwork tasks). They need to emphasize meaningful practical applications and problem-solving abilities. This is a formidable task, considering the diversity of students in most classrooms, and that many teachers rely heavily on textbooks and accompanying teachers' guides, not only for planning, but also for delivering instruction. Many texts are inadeqaute in subject matter coverage. In addition, they emphasize memory at the expense of understanding and integration of material. Improving the quality of textbooks is critical to improving the quality of schooling. In taking a more active role

in instruction, teachers (who are adequately trained) should participate in textbook selection and evaluation. They will need to adapt text materials to their unique needs as well as their classes, but they should not rely on texts to convey information. Within classes, teachers must design tasks which are appropriate for individual pupils or groups of students and communicate criteria for successful performance.

We should point out here that grouping and differential instruction are not inherently good or bad. But it is clear that too often slower students or those from low SES backgrounds are relegated to groups which receive largely repetitive, meaningless seatwork activities. Teachers must guard against such effects of negative expectations they may hold for these pupils. All students must succeed at meaningful tasks if they are to perceive themselves as competent individuals.

Besides basic skills instruction, all students must also learn more general critical thinking and problem-solving skills which will be useful to them in a variety of subject areas. Such skills may be critical in helping students to accommodate the diverse and fragmented curricula and instruction that many of them, particularly low achievers, now receive.

Another area in which students need to receive instruction involves skills necessary for self-evaluation, self-management, and goal setting. These independent learning strategies will benefit younger students in structured educational settings, but are invaluable to older students who must assume more responsibility for their learning. Surprisingly, there is little evidence that teachers attempt to teach these skills (which are necessary for intrinsic motivation) by, for example, allowing students some choice in learning activities. Less directly, teachers can de-emphasize external rewards for classroom achievement. In fact, it seems that many

teachers do not even convey their own criteria for successful completion of tasks to students.

The Commission papers we reviewed, as well as other research, indicate that in all areas of schooling teachers must constantly monitor students' behavior, perceptions, beliefs, attitudes, etc. and adjust their own behavior to meet students' needs. For example, teachers need to be able to assess, and if necessary, correct misunderstanding of directions, misconceptions about subject matter, self-perceptions of ability, etc. In order to do this teachers will need, among other things, extensive knowledge concerning cognitive and social development.

One funadmental issue related to improving the quality of schooling is the ability of teachers to fulfill the diverse instructional demands described above. In this regard, teacher education institutions could do a much better job of preparing teachers than they currently do. For example, in order to possess a thorough knowledge of subject matter, multiple and diverse curriculum materials, relevant instructional techniques, elementary teachers may need to be trained as subject matter specialists in one area. Schlechty and Vance (in press) point out that these institutions must be more selective in determining who is allowed to enter teacher education programs. However, it may be that a restructuring and redefining of the teacher's role, particularly at the elementary school level, will also be necessary if schools are to attract and retain competent persons as teachers. Currently the best students do not choose to be teachers, and many of the best teachers leave teaching for other careers.

Schlechty and Vance argue that the tendency to separate administrators from teachers and to view teachers as workers and administrators as managers (with more status and rewards than teachers) undermines the professionalism

which should be associated with teaching. Further, they point out that the reward system of public schools is aimed more at recruiting new teachers rather than retaining or motivating competent teachers once they are hired. In short, there is no clearly defined career ladder for teachers.

In order to make teaching attractive to academically able persons, Schlechty and Vance propose that all concerned with education should view the school as a workplace, with students as the primary workers. In this view the classroom teacher is seen as a first-line supervisor, and more responsibility for training teachers should rest with the public schools. Highly qualified teachers would be given high-status roles in which they would assist university professors and public school administrators in the training of new teachers and conducting research and development. By involving teachers in the training of new teachers, Schlechty and Vance believe that universities could then use their resources to provide prospective teachers with instruction in theories from the social and behavioral sciences and courses in research methods, statistics, and evaluation. They believe that these changes are necessary to alleviate what they view as an intellectual crisis among teachers and to provide teachers with both the necessary conceptual understanding and practical skills needed to be a successful teacher.

In order to fulfill a multitude of instructional demands teachers must have better training (preservice and inservice) which is based upon a belief that all students can learn. In particular, teachers must know how to coordinate curriculum and instruction so that there is more continuity in schooling, both within and between grade levels. We have focused this discussion thus far on teachers, because we believe that they have perhaps the greatest effect on student achievement, and because most of the research and the papers we have reviewed concern teacher behavior. However,

schooling outcomes are affected by many other factors, some of which lie outside the school: student characteristics, parents, community groups, central school administrations, school boards, etc. For example, principals need to take a more active role in the academic affairs of their schools, particularly in encouraging high academic standards. We now turn to a discussion of societal and structural influences on curriculum.

Societal and Structural Influences on Curriculum

In a Commission paper, Resnick and Resnick present a historical and comparative analysis of standards, curriculum, and performance in U.S. education. They point out that in concern over achievement and whether other countries may be requiring and obtaining better performance in their schools, many persons advocate higher academic demands in U.S. schools. A related problem is that employers and higher educational institutions cannot utilize diplomas and degrees as reliable indicators of individuals' competence. Various testing and assessment procedures have been developed in an attempt to ascertain the value and similarity of degrees from different institutions or grades from various schools.

Resnick and Resnick rightly point out that curriculum is a major determinant of educational standards. In their discussion they allude to the century-old conflict (particularly at the high school level) over whether there should be a common curriculum for all pupils, or a differentiated one. There is also the question of the relative emphasis which should be placed on vocational or traditional academic subjects. The specific arguments concerning these questions at any point in history are largely determined by external factors such as the growth in size and character of the population and the characteristics of the job market.

The differentiation in current curriculum reflects the need to accommodate a variety of students. There is clear evidence, however, that a

larger proportion of pupils now come from families whose backgrounds are not culturally compatible with American schooling. Only a minority of students elect to take vocational training. The schools' effort to offer a large number of curriculum options different from college preparatory ones has resulted in a multitude of diverse courses in the general high school curriculum rather than a carefully planned, alternative program. As more "practical" courses have been added to accommodate students of lower abilities, or those who might not be interested in attending college, instruction in more traditional academic material has been necessarily reduced. It seems that traditional coursework is still required, but only minimally in most cases, and that these requirements can be met with a variety of elective courses. There are actually several different high school programs that students may take within most schools, and these programs vary in their requirements.

In a related paper for the Commission, Cusick argues that the diverse objectives of public high schools in the United States have resulted in a focus on a common goal: to keep as many students as possible in school whether or not they want to acquire useful knowledge. A fundamental premise of this goal is that basic knowledge can be made interesting and conveyed to everyone. However, Cusick suggests that the needs of all students result in emphasis on attendance, and that discipline takes away time which could be spent on coordination and supervision of learning. After initial scheduling, there is very little coordination of curriculum by individual teachers, who usually face a heterogeneous group of children. The result is an incredibly diverse curriculum in which many courses are constructed with retention of low-ability students primarily in mind. The result is that curriculum coordination is virtually ignored and little discussion of

the relationship of individual courses to the whole curriculum occurs. He further suggests that reform of high school education must center on the substance, not the "form' of learning.

Such differentiation has led Adler (1982), who believes that the schools have not provided equal educational opportunities for everyone, to propose a twelve-year core curriculum. One type of learning in this curriculum consists of basic intellectual skills of reading, writing, mathematical computation, and scientific investigation. These are taught largely by practice and coaching. A second type of learning involves the acquisition of fundamental knowledge: history, literature, languages, mathematics, science, and the fine arts, and should be taught primarily by lecturing. A third area refers to understanding: the appreciation of works of art and the ability to think critically about ideas and values. Adler also proposes eight years of manual arts. There are no electives in this curriculum.

While there are obvious problems with the implementation of such a basic curriculum for all students (students vary in ability and background, many teachers do not possess skills necessary to convey such instruction), it does provide a useful framework for considering the goals of schooling. It seems obvious, for example, that there is currently too much emphasis on minimum competency in basic skill areas, and too few secondary students elect to take what challenging courses are available. However, depending on societal and structural factors, it is likely that in a particular school, one or another of these areas would be emphasized.

Part of the problem that confronts American education is the fact that citizens hold diverse expectations and conflicting opinions about the goals of schooling. Lacking structural mechanisms for obtaining consensus and

directions, decisions are made in ways that do not explore the implications of decisions for the system as a whole. As a result, many anomalies exist in the U.S. educational system. For example, earlier in the paper we reported that Ward et al. found that the seventh-grade curriculum was not more demanding than that found in the sixth grade.

Ironically, it appears that more sorting of students (application of standards) takes place in first-grade classes than in high school or college classrooms (see Newman for a discussion of low standards for student performance in higher education). However, we think it would be more sensible for schools to emphasize quality instruction in the early grades, and to demand more student initiative and higher performance in high school and college. Unfortunately, it appears that expectations for American youth are unevenly communicated by school structures, and this poses problems for students in interpreting their roles as student as they move from class to class and level to level.

Methods of Improving Curricula

Although the current curriculum in most American schools is not demanding, Rosnick and Resnick discuss several ways in which it may be improved. In addition to the positive influences of study Commission recommendations and curriculum development projects these authors point out that the individual states need to take more initiative in setting course requirements, particularly in the absence of a nationally prescribed curriculum. Existing state requirements for coursework are quite limited.

As we stated earlier, textbooks are one of the most influential determinants of curriculum and educational standards. While there are divergent views concerning the variation that exists among texts in content, five or six large textbook series dominate about 80% of the market in reading and math. Although there is much room for improvement in texts, there is

evidence that demands of educators and the public can positively influence the content of the textbooks.

Resnick and Resnick also discuss the structure of examinations in American schooling, which consist almost entirely of advanced placement and and minimum competency testing. They point out that few U.S. students ever take comprehensive examinations (of how well they have mastered a particular curriculum) they can study directly for, as opposed to students in France or Great Britain. Furthermore, by focusing on minimal standards, the competency testing movement in this country has limited its potential to upgrade academic standards. Although there are difficulties associated with competency testing (only concepts tested may be taught), limited use of such examinations is one means of upgrading curriculum standards.

Tracking is another alternative for attempting to upgrade school standards. Resnick and Resnick argue that there is considerable tracking in American schools, even though many persons are opposed to the concept. They point out that American schools have failed to make a clear choice concerning tracking, and have not adequately tested its effects. These authors argue that one alternative, increased, overt tracking, is likely to result in higher standards of performance, primarily for the most able students. Another quite dissimilar alternative is a core, demanding curriculum for all pupils, as advocated by Adler (1982). In between these are several forms of tracking systems. However, any program which involves tracking must contain high-quality programs for students who are not in the most selective programs.

In this section of the paper we have discussed some broad changes in schooling which may be necessary to improve the academic performance of American students. However, there are many less extensive alterations which teachers, parents, and others can make which will have a positive effect

on achievement (e.g., active teaching, more effective management systems). Any change, however, must be implemented only with thoughtful consideration of what the edducational priorities of American public schools should be, as well as a careful examination of the characteristics of those persons who will be directly affected or involved.

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